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Original Articles

THE DURATION OF LIFE AFTER EXTENSIVE HEMORRHAGE OF THE BRAIN.*

WILLIAM G. SPILLER, M.D.

Professor of Neuropathology and Associate Professor of Neurology in the University of Pennsylvania.

PHILADELPHIA.

My attention has been called recently to a diagnosis of apoplexy in a case in which life terminated in about five or ten minutes after a severe attack began. The person, a woman, had been in good health previously, was nearly 70 years of age, and after retiring was heard to groan. She was found within a few minutes with her head hanging over a bath-tub and her face much congested. A physician, called at once, pronounced her dead and gave apoplexy as the cause of death.

My experience has not justified a diagnosis of apoplexy in cases in which life has been terminated so quickly. I have taken thirteen specimens from my collection of pathologic conditions, in which extensive hemorrhage of the brain was found at necropsy. Many of these were from cases in my service at different hospitals; others were from cases in the service of Dr. Mills. In all instances life had been prolonged at least hours after the onset of the apoplexy, even when the hemorrhage was very extensive, had broken into the ventricles, and filled all the ventricles, even the fourth. In two cases of this kind (1 and 2) life was prolonged several hours; in one about five hours, in the other eighteen to twenty hours.

As a rule extensive rupture into the lateral ventricles is followed by more rapid death than when the ventricles escape, but a moderate hemorrhagic exudate into the ventricles is not necessarily rapidly fatal. In nine cases (3, 4, 5, 6, 7, 8, 9, 10 and 11) the lateral ventricles were implicated. In Case 3 death occurred after three days; in Case 4 after eleven days; in Case 5 after at least five days; in Case 6 after at least twenty-four hours; in Case 7 after five or six days; in Case 8 after about five days; in Case 9 after about a day and a half; in Case 10 after sixteen days; in Case 11 after about two days.

Case 10 is remarkable in that the hemorrhage was very extensive in the left cerebral hemisphere and extended into both lateral ventricles, and yet the patient lived sixteen days.

In Cases 12 and 13 the ventricles were not implicated; in Case 12 life persisted a little over six days; in Case 13 almost two months.

It seems to be held by some that life must be terminated within a few days if the hemorrhage has destroyed a large part of one cerebral hemisphere, but Case 13 shows this is not necessarily so. In this case, in which life persisted almost two months, the clot was found partly encapsulated and measured 7 x 2.5 cm. It destroyed the lenticular nucleus, a large part of the posterior limb of the internal capsule and extended to the island of Reil. It is truly remarkable that the brain may be so severely injured without a speedy termination of life.

The cases, briefly presented, are as follows:

CASE 1 (No. 308).—*History.*—W. E. L., aged 52, became hemiplegic on the left side after an apoplectic attack November, 1905, and was unconscious twenty-four hours. He became able to walk later, and on different dates had a few convulsions. On Nov. 20, 1905, shortly after noon, he fell to the floor, and was put to bed perfectly conscious, but very gradually he began to lose consciousness, and in about an hour after the fall he was entirely unconscious. He then had a severe convulsion and died about 5 p. m. the same day. He lived about five hours after the beginning of the apoplectic stroke.

Autopsy.—A large hemorrhage had destroyed the right lenticular and caudate nuclei, and had filled all the ventricles, even the fourth, and had extended to the base of the brain. The hemorrhage was chiefly ventral to the lenticular nucleus, but extended into the front part of this structure, and had broken into the anterior part of the right lateral ventricle. Much blood was found over the pons and medulla oblongata.

CASE 2 (No. 370).—*History.*—John E., aged 26, was admitted to the hospital Sept. 15, 1906, and died Nov. 17, 1906. About five weeks before admission he took a large dose of quinin; he then became very drowsy and was unconscious for three days. When he recovered consciousness he was paralyzed on the left side. He was able to walk about a week later. The notes state that "yesterday" in the afternoon he had severe repeated convulsions, lasting until his death. His pulse reached 160; sweating was profuse; he vomited, and died the following day at 10:30 a. m. He, therefore, lived about eighteen to twenty hours, or at least from the afternoon of one day to 10:35 o'clock of the next day.

Autopsy.—The hemorrhage filled all the ventricles completely, destroyed the greater part of the right cerebral hemisphere, including the region of the lenticular nucleus and the right occipital lobe.

CASE 3 (No. 357).—*History.*—Charles S. was brought into the hospital Oct. 2, 1906, unconscious, and did not regain consciousness before his death, on Oct. 5, 1906. He was paralyzed on the right side. He lived at least three days.

Autopsy.—A hemorrhage was found measuring 2x7 cm. It destroyed the left lenticular nucleus, part of the posterior limb of the internal capsule, and extended almost from the posterior horn of the lateral ventricle to the anterior horn, and ruptured into the latter, distending it with a recent clot.

CASE 4 (No. 286).—*History.*—William U., aged 72, had had diabetes many years. He retired at his usual time the night before admission to the hospital, and was found at noon, March 15, 1905, lying at the side of the bed. When seen by his physician at 12:30 p. m. he was semi-conscious and paralyzed in the left upper and lower limbs. His speech was mumbling. He was brought to the hospital March 15 and died March 26. He, therefore, lived eleven days after the stroke.

*From the Department of Neurology and the Laboratory of Neuropathology in the University of Pennsylvania.

Autopsy.—A large hemorrhage was in the right internal capsule, optic thalamus and lenticular nucleus and a clot filled the center and part of anterior horn of lateral ventricle.

Case 5 (No. 144).—*History.*—Annie S., aged 35, was admitted to the hospital Nov. 5, 1897, in a semi-conscious condition, with a history of acute alcoholism of three weeks' duration. Some twitching of the facial muscles was noticed on the fifth day. The date of death is not given, but the statements show that she lived at least five days.

Autopsy.—A large hemorrhage was found in the left lateral ventricle, not extending into the posterior horn. The inner surface of the lenticular nucleus and the anterior portion of the optic thalamus were disorganized. The hemorrhage was evidently recent, the blood being dark colored and soft.

Case 6 (No. 50).—*History.*—James L., aged 76, was admitted to the hospital Nov. 5, 1897, paralyzed on the right side and deeply stuporous. In the morning of the same day he had fallen unconscious while walking. The day following admission he was more conscious and noticed those about him, but he gradually became more stuporous until his death. The date of death is not given in the notes, but the statements show that the patient lived at least until the next day.

Autopsy.—A large amount of clotted blood was found in the left lateral ventricle. Hemorrhage filled both ventricles,

Photographs of sections made through the pons in Case 2, in which the greater part of the right cerebral hemisphere was destroyed and all the ventricles were filled with blood. The great distention of the fourth ventricle by the blood clot is shown. The surrounding tissue was stained from the blood. The patient lived eighteen to twenty hours after the attack began. (Photographs by Dr. Alfred Reginald Allen.)

and on the left side had invaded the thalamus, the posterior portion of the lenticular nucleus, the internal capsule, and the adjoining part of the occipital lobe.

Case 7 (No. 318).—*History.*—James W., aged 37, became paralyzed on the right side during the night of July 4, 1905. He improved greatly. He fell on the evening of Dec. 12, 1905, and became stuporous, had conjugate deviation of the head and eyes to the right, and paralysis of the face and limbs on the left side. He improved considerably. On December 23 it is stated that he had been more stuporous for a few days and his pulse was weaker. He was still more stuporous on December 24, did not change his position in bed, and the pulse was weak and rapid. The pulse was hardly perceptible on December 25, and the man was very weak. He lived five or six days in a very critical condition.

Autopsy.—A hemorrhage, 2.5x3 cm., was found in the occipital lobe. It extended into the lateral ventricle.

Case 8 (No. 336).—*History.*—Charles H., aged 80, was admitted to the hospital Oct. 28, 1899, and died March 11, 1906. He was brought from the out wards March 6, 1906, in an unconscious condition. The breathing was stertorous. The head and eyes were turned to the left. The right upper and lower limbs and the right side of the face were paralyzed. He died March 11, 1906, at 10:40 a. m. He lived about five days.

Autopsy.—The hemorrhage destroyed the posterior part of the left optic thalamus and of the posterior limb of the internal capsule and lenticular nucleus, and filled the descending horn of the left lateral ventricle.

Case 9 (No. 273).—*History.*—Harriet J., aged 44, fell to the floor and became unconscious on Jan. 14, 1905, at 9 a. m. When she was brought to the hospital the same day she was stuporous but could be aroused, and was paralyzed on the right side. Speech was almost unintelligible. From 11 a. m. January 15 she was almost continually in convulsions until death. Lumbar puncture was performed at 5 p. m., and the patient died that evening. She lived about a day and a half.

Autopsy.—A large hemorrhage 6.5x4 cm., of recent development, was found in the left lenticular nucleus, extending into the internal capsule, and at the anterior end of the left ventricle had broken into the ventricle. Hemorrhage was found in both lateral ventricles, but mostly in the left.

Case 10 (No. 429).—*History.*—Ernest W. was admitted to the hospital Jan. 25, 1908, and died Feb. 10, 1908. While working about the hospital on January 25 he suddenly fell and became paralyzed on the right side in face and limbs. He was stuporous but could be partly aroused. Loud commands were not heeded. He had dysphagia, aphonia and enuresis. He showed no improvement on February 2. The pulse was 105 and feeble. He lived sixteen days, a remarkably long time in consideration of the extensive hemorrhage.

Autopsy.—A hemorrhage occupied a large part of the posterior half of the left cerebral hemisphere, and both lateral ventricles contained blood. The clot within the hemisphere measured 5x5.5 cm. and at one level 5.5x6.5 cm.

Case 11 (No. 230).—*History.*—Miss H., aged 50, fell on the evening of April 19, 1904, became completely unconscious, and seemed to be completely paralyzed. On April 21 the pulse was weak and respiration stertorous. She died that afternoon. Life was prolonged almost two days.

Autopsy.—A large hemorrhage was found filling the whole of the left lateral ventricle but not extending into the right ventricle. The substance of the brain was implicated in the lesion only near the anterior part of the left lateral ventricle.

Case 12 (No. 241).—*History.*—Gottlieb R., aged 77, was admitted to the hospital July 19, 1904. The attack occurred suddenly during the night before admission, and the patient was found lying on the floor unconscious. Respiration was of Cheyne-Stokes type. The paralysis was complete on the left side. The pulse was rapid. The patient was partly conscious on July 20, and improved somewhat later until July 24, but died July 25. He lived a little over six days.

Autopsy.—A hemorrhage measuring 4x5 cm. had destroyed the greater part of the right lenticular nucleus, the posterior part of the posterior limb of the right internal capsule, and extended beyond the posterior portion of the optic thalamus.

Case 13 (No. 348).—*History.*—Hesse, aged 40, was admitted into the hospital in an unconscious condition March 20, 1906. No history was obtainable. The patient had been found in a stable. He had conjugate deviation of the head and eyes to the left and paralysis of the right upper and lower limbs. He was stuporous and did not speak at any time. No marked improvement occurred during his long stay in the hospital. An operation was performed and a subdural hemorrhage over the left temporal region of the brain was removed. He died May 18, 1906, two weeks after the operation. This case was noteworthy because of the long duration of the hemorrhage.

Autopsy.—A large blood clot was found in the left cerebral hemisphere, measuring 7 x 2.5 cm. It had destroyed the lenticular nucleus, a large part of the posterior limb of the internal capsule, and extended to the island of Reil. The clot appeared of long duration and was partly encapsulated.

4409 Pine Street.

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THE SPHENOIDAL SINUS.

A STUDY BASED ON THE EXAMINATION OF EIGHTY-FIVE SPECIMENS.*

JAMES A. GIBSON, M.D.
Professor of Anatomy, Medical Department, University of Buffalo.
BUFFALO.

In presenting this paper, I may say that I was led to take up this subject for several reasons, one of which was the difficulty I had in obtaining definite details concerning this cavity, another was that I believe its importance is underestimated by the majority of practitioners. I would bespeak careful consideration for this sinus, occupying as it does a central position in the cranial cavity, being on the one hand in close relationship with the most important and delicate parts of the encephalon, and on the other by its communication through the nasal cavity with things external.

It is much more difficult of approach than either of the other bony sinuses and presents decidedly more complicated relations. Compared with the ample investigation the maxillary and frontal sinuses have received, the sphenoidal sinus has been somewhat neglected. Much work must yet be done in this connection, particularly in regard to the lymphatics of the sinuses. Poirier and Cuneo say, "Our knowledge of the lymphatics of the mucous membrane which lines the cells and sinuses of the nasal fossæ is still imperfect. The small degree of development which these cavities present in the infant (the usual subject for experimentally injecting the lymphatics) renders the study of these lymphatics somewhat difficult. On account of the practical interest which is attached to this question from the standpoint of the pathogeny of certain cerebral lesions, consecutive to nasal infection, we think it advisable that further researches should be undertaken on this particular point." A study of even a very limited number of sphenoids will amply justify the above quotation. The number of important structures surrounding the sinus on almost all sides is great, in many cases the bony separation is of the thinnest and most delicate character and suggests great possibilities of cerebral involvement due either to trauma or infection.

Some of the important structures in relation with the sphenoidal sinus are, anteriorly, the ethmoid bone, containing the anterior and posterior ethmoid cells, in front of this the frontal and nasal bones, by means of which, as has been recorded,[1] the force of a blow received on the forehead has been transmitted as far back as the body of the sphenoid, resulting in the laceration of the internal carotid artery with fatal hemorrhage. The optic commissure and nerves are placed above and on either side of this sinus. The cavernous sinus and ophthalmic veins skirt the lateral wall of the sinus, as does also the internal carotid artery. Partly above and partly behind is the pons, with a large and important set of veins ramifying over the posterior wall and basilar process. The second division of the fifth nerve lies close enough to it to be occasionally encroached on by the sinus, as mentioned in one of my cases. The maxillary sinus may be separated from the sphenoid sinus by an exceedingly thin plate of bone and may, occasionally, communicate with it. Below the sinus is placed the vomer, strengthening the floor and adding to its thickness, and also incidentally to the difficulty of approaching it from this direction; the naso-palatine nerves intervene between the vomer and the sphenoid.

The data contained in this paper are the result of an examination of eighty-five sphenoidal sinuses. Obviously it was impossible to obtain perfect specimens in many cases. Some of the dry ones have been injured in the cutting, and some of the dissection specimens are partial. For these reasons I have included in this series material from which complete observations could not be made. This series will be continued at a later date.

The exact age could not be obtained in many cases and has frequently been estimated. The term "dry" signifies that all the soft tissues have been removed, while the term "dissecting-room" is applied to those specimens used just as they come from the dissecting table without a further removal of the soft structures. This would cause a very slight difference in measurements. Sagittal sections were made as nearly in the median line as possible, while coronal sections were cut through the middle of the pituitary fossa.

In laying down rules for the measurements it was found impracticable to select certain anatomic points as universal standards for measuring. The position of the sinus varies greatly, therefore no two points will give a universal maximum or minimum measurement. I have, therefore, taken the maximum measurement in the antero-posterior, transverse and vertical directions. This same difficulty is met with in obtaining the thickness of the walls of the sinus; I have taken the thinnest point as my standard, except where there is a very marked difference, as is usually seen in the posterior wall; here I have frequently given the maximum and minimum thickness.

These observations have been made with the following points in view:

1. The collection of definite data regarding the position, size and extent of the sinus.
2. The average thickness of its walls.
3. The relationship in size, if any, between the frontal, sphenoidal and maxillary sinuses.
4. The relationship, if any, between a large posterior nares and a small sphenoidal sinus, or the reverse.
5. The establishment of certain averages between anatomical points, obtainable in the living subject, which might be of assistance to the surgeon.
6. The recording of abnormalities and their possible influence on surrounding parts.

In this series there are males, 77; females, 7; unknown, 1. Total, 85.

The preponderance of male specimens renders any comparison under the head of sex of no value. It is, however, to be noted that the sinuses in the female specimens are not markedly smaller than in the males, averaging in the antero-posterior, transverse and vertical diameters 22 mm., 28 mm., 18 mm.; being, roughly, 1 mm. less in each diameter than the males.

Age.—Many of the ages given are estimated and may not be absolutely accurate. I do not find, however, any ground for the statement which has been made that the size of the cavity increases with age, this opinion is based on those cases in which the correct age was known. So far as my observations go, age gives no clue whatever to the size of the sinus; many old specimens presented large sinuses, while the reverse was often the case. The number of specimens used in taking the average age was 81; the average of this series is 47 years.

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

1. Lancet, Lond., 1891, p. 1277.

Nationality.—As might be expected in a collection of this description, the nationality is in most cases unknown. Specimens 28 and 29, both from Indians, present large nasal fossæ and well marked sinuses. Specimens 76 to 84, which are from a collection kindly loaned me by Dr. J. F. Fairbairn, are all from the postmortem room in Vienna. They are rather under the average in size, and have been classified under the heading "Austrian."

Method of Making Observations.—In the majority of cases a sagittal section was made as nearly as possible in the median line, as this gives the best general view. I wish to draw attention to the fact, however, that inasmuch as a sagittal section is the one usually shown in text-books and illustrations, the idea is gained that the antero-posterior diameter of this cavity is much greater than the transverse. This is not correct, so far as my experience goes, as the transverse diameter is slightly greater than the antero-posterior. There is more room for lateral expansion of this sinus into the wings of the sphenoid bone than posteriorly, and when the expansion of the air chamber takes place in the anterior direction, it usually does so as enlarged posterior ethmoid cells.

Fig. 1.—Typically placed large sphenoidal sinus. Note extremely thin posterior wall and small frontal sinus.

The coronal sections were cut about the middle of the pituitary fossa. A few horizontal and oblique sections were made, but they are not so satisfactory as the sagittal or coronal. The sectioning was done by means of an exceedingly fine hand-saw to minimize the injury to the delicate walls.

Situation of Sinus.—This is most frequently found in the anterior and upper part of the body of the sphenoid bone (Fig. 1). It is also found occupying the whole of the body in not a few instances (Figs. 2 and 5). It may be said, however, that the line of demarcation between the occipital and sphenoid bones is not well marked, and it is difficult to limit the body of the bone exactly. An analysis of the position shows the following:

Occupies whole body in 29 instances, about 30 per cent.; occupies the anterior and upper part in 51, about 60 per cent.; occupies the center of the body in 3 instances; extended into the basilar process in 2 instances; entirely absent in 1 instance; in 3 cases it was situated laterally in the body; in 1 case it was so far forward and so small as to make it doubtful whether it was the sinus or a posterior ethmoid cell. Some of the above are classified under two headings, e. g., as extending into the basilar process, and also occupying the entire body of the sphenoid.

Antero-posterior Diameter.—Utilizing 81 specimens presenting an obtainable antero-posterior diameter, the average was found to be 21 mm. (17/20 inch.) Excluding the Vienna series, in which the antero-posterior diameter was universally small, the distance was 23.25 mm. (24/25 inch).

Transverse Diameter.—Taken in a series of 70 specimens in which it was possible to take the complete diameter, not merely by doubling the half diameter, gave 29 mm. (1 3/16 inches).

Vertical Diameter.—Taken in a series of 75 specimens, gives an average of 18 mm. (¾ inch).

Fig. 2.—Typical reniform sinus, large sphenoidal accompanying large frontal sinus.

Thickness of the Sinus Walls.—From the fact that in many of the specimens the walls had been injured somewhat, I have made no exact averages, but as would be expected, the anterior wall is much the thinnest, being largely made up of the delicate sphenoidal turbinate bones. From observations made on most of the specimens I would estimate the average thickness of the anterior wall to be, in the dry specimens, not more than from .25 to .50 mm. (1/100 to 1/50 inch). The roof of the sinus varies in thickness more than the anterior wall. It is sometimes as thin as .25 mm., but is oftener approximately 1 mm. in thickness, rarely is it over 2 mm. thick (1/12 inch). The floor is, as a rule, thicker than either of the other boundaries. The thickest portion of the floor is almost always found posteriorly (Fig. 1), due to the fact that the body of the sphenoid is buttressed on the basilar process of the occipital posteriorly and inferiorly. The thickness of the floor ranges from .25 mm. to 9 mm. (1/100 to almost ⅓ inch). Rarely is it as thin as the first mentioned figure, however. The

thickness of both the floor, and more particularly of the posterior wall, depends, in large measure, on the position of the sinus in the body of the bone. As has been pointed out, in about 60 per cent. of cases the sinus is placed decidedly forward, which increases the thickness of both the posterior wall and the floor, but particularly the former.

The thickest part of the posterior wall of the sinus is always found on the same level as the floor. Thus, in operating in this cavity, the possible danger of penetrating the posterior wall is lessened by avoiding the upper part of the sinus wall posteriorly. The variation in the thickness of the posterior wall is from .25 mm. to 10 mm. (1/100 to 2/5 inch). The same sinus may present a great difference in thickness between the upper and lower parts of the wall.

Distance of the Anterior Wall of the Sinus in Front of Hamular Process.—This process appears in the form of a hook which is directed downward and outward from the lower extremity of the internal pterygoid plate. It forms the pulley-like arrangement about which the tendon of the tensor palati muscle winds. It can be felt directly behind the last upper molar tooth, and may give some information as to the situation of the sinus from below. I have found that the anterior wall of the sinus usually projects in front of a plane drawn vertically through these processes (Fig. 6); in no case did I find that it fell posterior to this plane. The average distance in front of this plane was 7 mm. (slightly over ¼ inch). In 9 instances it corresponded with this plane. In 26 it was impossible to estimate it. These skulls were not sawed in a frame or from definite angles, so that at times, there was difficulty in striking a perpendicular plane from which to estimate this point.

Fig. 3.—Sinus with very thick bony lamina placed somewhat to one side, large frontal sinus.

Thickness of Bone Between Optic Foramen and Cavity of Sinus.—The distance between the optic foramen and the sinus was taken in many instances. This was done with the view of drawing attention to the close proximity of important nerve and other structures which might possibly be affected by disease of the sinus. The bony wall at this point is very thin, varying from .25 mm. to 1 or 2 mm., and averaging not over .5 mm. (1/50 inch).

Distance Between the Anterior Wall of the Sinus and the Inferior Extremity of the Nasal Bone.—There are a number of circumstances which modify this distance, as well as the one which follows it. Some of these are, (1) the degree of prominence of the nasal bone; (2) the position of the sinus cavity in the sphenoid, the more anterior this is the less the distance; (3) the number and size of the ethmoid cells, the larger and greater the number, the farther back will the anterior wall of the sinus be, and, (4) the conformation of the skull in a general way, especially its antero-posterior diameter.

In estimating this distance, the lowest part of the nasal bone was taken, and the most anterior part of the anterior wall as nearly as possible equidistant between the inferior extremity of the nose and the anterior nasal process. The average obtained from measurements in 80 specimens was 57 mm. (2½ inches). The greatest distance was 64 mm.; the least distance was 40 mm.

Distance Between the Anterior Wall of the Sinus and the Anterior Nasal Spine.—The same series of 80 specimens was used and gave an average of 57 mm. (2½ inches). The greatest distance was 71 mm. (2¾ inches); the least was 45 mm. (1¾ inches.)

Fig. 4.—Shows sinus placed anteriorly and superiorly inclining to the vertical type.

Size of the Posterior Nares.—Considering the relation borne by the posterior nares to the sphenoidal sinus, it had struck me that there might possibly be some relationship in size between them. Small posterior nares might occur because of a large sinus, and vice versa. There were utilized for this comparison 47 specimens, most of them dry, which would give a slightly greater measurement than the recent specimens. The average transverse measurement was 27.1 mm. (1 inch). The average vertical measurement was 25.59 mm. (about 49/50 inch).

It was observed that quite frequently there was considerable difference in the measurements made on the two sides of the posterior nares. This was more noticeable in the recent, but was also appreciable in the dry specimens.

As a result of this comparison, I may state that no relationship was observable. There were specimens presenting small nares with small sinuses; there were also large nares concomitant with large sinuses. This feature cannot be counted on to give any information as to the

size of the sphenoidal sinus, the reason for this being that the sinus, when enlarged, extends laterally, forward or upward, and not downward.

General Shape of the Sphenoidal Sinus.—This depends very largely on the shape of the body of the sphenoid bone; in many instances the cavity is of an irregular form. On observation, after a sagittal section has been made, the most common form is somewhat reniform, with the concavity upward (Figs. 2 and 5). This occurs in the specimens in which the entire body of the bone is occupied by the sinus; the next most common type is a more or less vertical or upright one which occurs in those specimens in which the cavity is placed somewhat anteriorly (Fig. 6); this variety presents a thick posterior wall at the lower part. There seems to be a third type in which the cavity is located centrally in the body of the bone and which may be irregularly ovoid in shape. There are also a certain few sinuses which are extremely irregular in shape. The reniform type is rather apparent than real, for in many cases the transverse diameter exceeds the antero-posterior (Fig. 8). Specimens 6, 7, 76, show a marked transverse diameter, in one case involving the great wings of the sphenoid.

Laminæ.—Usually a vertical, more or less, median lamina is presented (Figs. 3 and 7). This, however, may be displaced either to the left or right and is frequently obliquely placed. This lamina divides the sinus into two parts, and so far as my observations extend, there has not been any communication between them. I have not found any undue preponderance in size of the right over the left portion, or the reverse. Many small subsidiary laminæ are seen springing from the walls of the sinus (Figs. 4 and 5), usually the posterior and external walls. These are directed forward and inward and vary much in appearance; they may be thick and strong, or thin and delicate. Sometimes they occupy a more or less horizontal plane. They serve to strengthen the bone, and also produce pockets or fossæ in the sinus. Some specimens are absolutely devoid of any suggestion of a lamina. Others present almost a reticulated appearance, due to the number and complexity of their laminæ. In one or two specimens the median vertical lamina was so thick and dense as to make it impossible to break it down by anything but a chisel (Fig. 3).

Diverticula were found in 55 of the 85 specimens and by far the most usual situation of these was in the pterygoid processes (Figs. 5 and 6); 25 specimens showed diverticula invading this process. In 26 cases, the right side of the sinus was marked by diverticula, and in 21 the left. The orbital cavity ranks next to the pterygoid process in the frequency with which it is approached or invaded, there being 15 cases in which it was involved. It is to be remembered in this connection that the orbital process of the palate bone very frequently contains a cell. This cell may communicate with the sphenoid sinus, and in these instances, is practically a diverticulum extending forward from the sinus into the orbital cavity to a greater or lesser degree dependent upon the size of the orbital cell; in fact, it is not unknown for the sphenoidal and maxillary sinuses to communicate with each other by means of this cell. The walls of the cell are exceedingly thin and, as a result of this arrangement, there is a very close relationship between the posterior part of the orbital cavity and the sphenoidal sinus.

The anterior clinoid process was invaded in 4 cases; the posterior clinoid process in 1 case; the ethmoid process in 1 case; the sphenoidal fissure in 1 case; the foramen rotundum in 1 case; the basilar process of the occipital bone in 3 cases. In 2 cases the diverticula approached very closely the cribriform plate of the ethmoid. The deepest diverticulum measured (Fig. 5) was 25 mm. (1 inch); there was also one measuring 14 mm. (11/20 of an inch). Diverticula in normal conditions would be a matter of little interest, but in disease, if pus were present, they would complicate the case and render drainage difficult. It is also a question whether a diseased sinus might not cause trouble in the orbit in those cases where they are closely approximated.

Fig. 5.—Shows diverticulum 25 mm. (1 inch) deep extending into pterygoid process and encroaching on sphenoidal fissure.

Fig. 6.—Shows vertical type with diverticulum and concomitant large maxillary and frontal sinuses.

Communications.—The openings from the sphenoidal sinus, as a rule, lead into the upper and posterior part of the nasal fossæ. They are usually situated a little more than half way between the floor and the roof in the anterior wall of the sinus, being more frequently of an oval shape and set somewhat obliquely. In size they vary from 1.5 mm. by 1 mm. to 8 mm. by 5 mm. (extreme measurements in my series). The average was 4.6 mm. by 3.5 mm. Leaving out the extremes and based on a general observation, 6 mm. by 3 mm. (¼ by ⅛ inch) would seem to be the size of the opening most commonly met with. In many cases, however, the opening is circular in form. When oval the openings us-

ually approach each other at their upper extremities. The openings sometimes communicate with the posterior ethmoid cells. This was thought to occur in one of my cases, but owing to injury to the specimen it was impossible to be sure of this fact.

A condition quite often is present in which the posterior cells are large and over-ride the sphenoidal sinus (Fig. 5). When this is so, the opening must almost of necessity take place into the ethmoid cells. In one specimen, No. 65, a very curious condition obtained. In this case there were two openings, oval in shape, 6 mm. by 4 mm. in size, leading through the floor of the sinus into the nasopharynx. These openings were of regular outline, placed symmetrically on either side of the vertical median lamina, and were additional to the two openings usually found communicating with the nose. Whether these openings were the result of disease or not I am unable to say. There is also present in this case a very large and irregular opening into the maxillary sinus which looks like the result of disease. The individual was a male of 36 years, who died of lateral sinus thrombosis.

Both openings into the nasal fossæ are not always on the same level. In specimen 69 there is an irregular opening on the left, and an oval opening at a somewhat higher level on the right side. The size of the opening in the dry specimen is no criterion of its size during life, for in very many cases the mucous membrane is found to overlap the bony opening and render it much smaller.

Fig. 7.—Coronal section through sinus, showing vertical median lamina and opening into posterior part of nasal cavity.

Fig. 8.—Coronal section through sinus of extreme width, showing involvement of lesser wings of the sphenoid bone.

Interesting Features.—Under this heading, I will take up various points not included in the headings on the large outline. The first point is whether there is any definite relation in size between the bony sinuses of the skull; that is, given a small sphenoidal sinus, does it follow that there will be found a large maxillary or frontal sinus to compensate for the smallness of the sphenoidal? It is almost impossible accurately to compare the size of these sinuses; it would be a task of great difficulty to take their cubic contents, so that these findings are the result of ocular comparison only and not of systematic measurements.

I have found that quite frequently a large sphenoidal sinus is concomitant with large frontal and maxillary sinuses (specimens 5, 7, 12, 13, 14, 20, 30, 35 and 53). There are also a number which show sphenoidal and frontal sinuses occurring concomitantly (specimens 10, 21, 27, 32, 39, 55, and 67). Specimens are also found in which small sphenoidal sinuses and large frontal sinuses are associated in the same skull, and vice versa. I think, therefore, that it can not be said that any definite relationship in size obtains between the different bony sinuses of the skull. I believe that it would be impossible to forecast with any accuracy the probable size of the sphenoidal sinus if the size of the frontal and maxillary sinuses were known.

As to the question of the relationship between the size of the posterior nares and the sphenoid, my specimens do not show anything definitely characteristic. In specimens 2, 3, 7, 8, 14, 15 and 53, the size of the posterior nares is greater than the average, and yet there occurs also a large sphenoidal sinus. In specimens 10, 16, 19 and 28, the diameters of the posterior nares are below the average, and there is also a small sphenoidal sinus. This is to be accounted for by the fact as mentioned before, that the size of the sinus is increased more in the transverse and antero-posterior directions than in the vertical.

In specimen 4 there is seen an extremely thin plate of bone of not more than .25 mm. (1/100 inch) separating the sinus from the sphenoidal fissure; at the inner angle of the fissure there is situated the ophthalmic vein with the sixth, fifth, third and fourth nerves in the order given, from within outward.

In specimen 7 a sinus of extreme transverse diameter is seen invading the great wings of the sphenoid (Fig. 8).

In specimen 11 is a large diverticulum, 14 mm. wide at the base, invading the pterygoid process of the left side, and contrary to what might reasonably be expected. The left posterior nares is much larger than the right, and the width is greater than the average. This is important as showing how little one can be guided in one's estimation of the size of the sinus by the size of the posterior nares. An interesting fact is that any operation approaching the sinus by way of the post-nasal space and from below would be unsatisfactory in many cases from the fact that the floor is sometimes quite thick, and that the sinus is often situated far forward (Fig. 4). (Some examples of the difficulty of such an operation are specimens 17, 19, 20, 22, 24, 34, 40, 51 and 52.) I have tried to pass a probe from the anterior nares into the opening of the sphenoidal sinus in many of the specimens and find that in most instances it can not be done without the removal of some portion of the nasal turbinates. In some few cases, where the turbinates were very small, it could be done.

Any rule for the passage of a catheter into the sphenoidal sinus must necessarily be imperfect if for no other reason than that the nasal turbinates vary greatly. Added to this is the liability of variation of the sinus opening. Adding the minimum distance from the anterior superior nasal spine to the shortest antero-posterior sinus I get as a result 57 mm. (2¼ inches). This will give the least distance from the anterior nasal spine to the posterior wall of the sinus, and furnish a conservative distance to which an instrument may be inserted without fear of entering the cranial cavity.

I would point out, in conclusion, that clinically this sinus is analogous to the tonsils in that it stands in such a position that it is prepared to receive and transmit infection primarily entering by way of the nose or nasopharynx.

I desire to express my thanks to Dr. A. T. Kerr, of Cornell University, Ithaca, for the loan of a series of nine specimens; also to Dr. J. F. Fairbairn, of Buffalo, for a similar loan of nine specimens, as well as to others who have loaned single specimens for use in this work.

170 Mariner Street.

THE PRESENT STATUS OF THE RADICAL OPERATION FOR EMPYEMA OF THE SPHENOID SINUS,

WITH DEMONSTRATION OF A NEW INSTRUMENT.*

ROSS HALL SKILLERN, M.D.

PHILADELPHIA.

Rhinologists concur in the opinion that when pus is being secreted by one or more of the accessory sinuses of the nose giving rise to symptoms, in spite of continued conservative treatment, a radical operation is imperative for a permanent cure. By the term radical I mean an operation which not only opens the sinus, establishing free communication with the nasal cavity, permitting thorough inspection and treatment, but which also prohibits, so far as we are able, a reinfection, or, in case a reinfection occurs, which allows the sinus to heal of its own accord with no discomfort to the patient other than the symptoms of an ordinary acute rhinitis.

The surgical relations of the sphenoid sinus from a rhinologic point of view embrace naturally those structures which are encountered during an operation in this region. We know if a straight line is drawn from the anterior inferior nasal process over the exact center of the middle turbinate it will strike the anterior wall of the sphenoid sinus (Zuckerkandl's line). While a number of German rhinologists[1] have taken exception to this line leading to the ostium of the sphenoid, nevertheless it will invariably strike either the anterior wall of the sphenoid, as Zukerkandl himself states, making no mention of the ostium, or the wall of a spheno-ethmoidal cell, which to all intents and purposes may be reckoned as a sphenoidal sinus divided by a horizontal partition.[2] The distance between these two points, according to Grünwald[3] and Hajek,[4] rarely exceeds 8 cm.; indeed, if one has passed a sound in this direction, 7.5 cm. in small heads or 8 cm. in large heads, measuring from the anterior inferior nasal process, the ostium and the sphenoid sinus are almost certain to have been penetrated.

The position of the ostium in the wall of the sphenoid sinus determines largely the possibility of sounding without more or less injury to the middle turbinate. The opening usually lies in the upper third of the anterior wall, the seat of predilection being deep in the spheno-ethmoidal fissure. The closer it lies in proximity to the septum (sphenoid rostrum) the more favorable the locality for sounding and the lower the ostium is situated in the anterior wall the deeper the sound will penetrate the sinus.

The position or condition of the middle turbinate also plays an important rôle in the procedure. Under normal circumstances the convexity of the posterior half hides the anterior wall of the sphenoid completely from view, and not until this has been removed and the pars nasalis of the anterior sphenoidal wall brought to view can an operative procedure be carried out in the neighborhood of the posterior olfactory fissure with any degree of safety. On the contrary, an atrophied middle turbinate or one which is strongly rolled inward certainly contributes to the difficulty of the operation. Deviated septums, septal spurs and ridges, polypi, etc., may add considerably to the difficulties previously mentioned. Suppose, then, under some favorable circumstance, we were able to see most of the anterior wall or pars nasalis by means of anterior rhinoscopy, the only remaining structure which might prevent the ostium from being visible would be the superior turbinate, and then only in the event of a deep spheno-ethmoidal recess, the ostium lying laterally and deep in the pars ethmoidalis. It is by no means necessary to have the ostium in view while endeavoring to pass the sound, but to my mind it is absolutely demanded when operative measures are about to be undertaken;[5] the anatomic relations of the superior wall to the optic nerve and pituitary body and the lateral walls to the sinus cavernosus and carotid artery, to say nothing of the brain itself, makes this region of operating one of extreme danger unless the operator has perfect vision of the entire field. Chiari[6] states that it rarely happens that one is required to open the sinus when the ostium is invisible. The various radical operations performed by operators at the present time have the same end in view, i. e., complete removal of the anterior wall of the sinus. This prevents any return of the disease, so far as retention symptoms are concerned, thus making the sinus practically continuous with the lateral wall of the nasal cavity. The ways and means employed, however, are many and varied. The operation is best performed under cocain, although some English writers[7] prefer choloroform. Operations may be divided into: 1. Extra-nasal, (a) frontal, (b) maxillary, (c) oral. 2. Endo-nasal, (a) indirect, (b) direct.

* Read in the Section on Laryngology and Otology of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

1. Zuckerkandl, E.: Normale u. patholog. Anat. d. Nasenhöhle, 1893, i, 338; Hansberg: Die Sondirung d. Nebenhöhlen d. Nase, Monatschr. f. Ohrenh., 1890; Zarnico, Carl: Die Krankheiten d. Nase u. d. Nasenrachens, 1894, 276.

2. This condition is present in every fourth case, according to Hajek. Sounding will establish an opening above the sphenoidal ostium, the measurement from the point of the sound to anterior inferior nasal spine being also over 8 cm.

3. Die Lehre d. Naseneiterungen, Munich, 1896.

4. Pathologie u. Therap. d. entzündl. Erkrank. d. Nebenhöhlen d. Nase, 1903, 2d ed., 259.

5. Compare Coakley, G. C., who does not advocate operative measures unless the region is plainly visible to the eye. An Easy Method of Entering the Sphenoidal Sinus for Diagnostic Purposes, Laryngoscope, 1904, 271.

6. Die Krankheiten d. Nase, 1902, 258.

7. Tilley, H.: The Symptoms, Diagnosis and Treatment of Chronic Suppuration in the Sphenoidal Sinus, Brit. Med. Jour., 1905, ii, 1198. Discussion Thomson, St. Clair.

THE EXTRA-NASAL OPERATIONS.

Frontal.—Opening the sphenoid through the frontal sinus is not performed unless the frontal is diseased and is but a step in that operation.[8] Opening through the ethmoid from the internal angle of eye. This operation was first suggested by Grünwald,[9] later by Kuhnt,[9] and is only to be recommended in those rare cases of ethmo-sphenoid disease where there is present bulging of both lamina papyracea and nasal wall, with severe ocular symptoms, the endo-nasal operation having already been carried out with no relief to the patient.

Jansen's Method.—Jansen,[10] of Berlin, makes a large opening in the canine fossa through the mouth, resects the medial wall of the maxillary sinus, together with the middle and inferior turbinate. The ethmoid and finally the sphenoid sinuses are now opened. The sphenoid is curetted and the entire cavity tamponed from the maxillary sinus, the oral opening being closed after the second or third tamponade. Berens[11] uses Jansen's method when there is marked deflection of the septum toward the diseased side, especially at its posterior end, even when the antrum is not diseased. Furet's[12] method is the same as Jansen's, except that the ethmoid cells are not opened. The disadvantages of these operations are:

1. Needlessly opening a healthy sinus.
2. Danger of wounding structures situated in the fossa-pterygo-palatina and causing profuse hemorrhage and subsequent disturbance of the sensibility of the face.
3. Danger of injury to the optic nerve.

The objections to Beren's procedure are: 1. Owing to the great tendency of the sphenoidal sinus to contraction, it must be treated locally for at least six weeks after the operation. It is not a wise plan to keep the fascial wall of the maxillary sinus open for that length of time.

2. The deviation of the septum is so great as to require correction. The operation on the sphenoid could easily be carried out after the preliminary submucous resection was done.

Reichelt[13] reported a case in which he removed the anterior and inferior wall of the sphenoid sinus through the mouth. The objections to this operation are that the sinus is not always present, and the sinus often assumes sizes and shapes which make the method impracticable.

THE ENDO-NASAL OPERATIONS.

Indirect.—Killian's[14] method consists in resecting the anterior third of the middle turbinate; the bulla is then opened and the instrument pushed through the basal lamella of the middle turbinate and continued through whatever ethmoid cells are found in the way, finally reaching and opening the sphenoid sinus. This method can be carried out in those cases where the pars ethmoidalis of the anterior sphenoid wall is sufficiently broad, but the instrument must make a passage from the ethmoidal bulla to the posterior ethmoidal cells, as well as the superior nasal passage and the spheno-ethmoidal recess, before it can penetrate the sphenoidal sinus.

This procedure can easily miscarry when an unusually large posterior ethmoid cell is present, for, according to Onodi,[15] the sphenoid sinus is small in these cases and can easily be missed. The principal objection to this operation, to my mind, is the fact that one is always working in the dark, and on account of the many anomalies found in this region, no matter how proficient one may be in the regional anatomy of the part, the operation is dangerous.

Fig. 1.—Author's modified hook for opening the ostium sphenoidale.

Fig. 2.—Author's modification of Hajek's bone forceps.

Shadle, of St. Paul, operated on the anterior wall of the sphenoid under control of a mirror held in the choanæ.

Direct.—This operation is preceded by a resection of the middle turbinate and often the posterior ethmoidal cells, the entire operative field being in plain view. Hinkel[16] breaks through the anterior wall with a sharp spoon, subsequently making the opening sufficiently large with a drill.

Schaffer[17] opens with an instrument similar to a sound and curette combined and apparently operates entirely by the sense of touch, for he says: "When one feels by raising and depressing the handle of the sound that the sphenoidal sinus lies fairly deep at its posterior end, after thorough cocainization, one introduces the spoon-shaped sound and presses the anterior wall of the floor until it breaks through, then removes the depressed splinters with bone forceps."

8. Killian and Krause: Die Killianschc Radicaloperation chron. Stirnhöhlenciterungen, Arch. f. Laryngol., 1902, xiii; Killian, G.: Bemerkungen z. Radicaloperation chron. Kiefer- u. Stirnhöhlencitterungen, Elft. Vers. des Ver. süddeutsch. Laryng., 1904; Winkler, E.: Zur Therapie d. Entzündungen d. Siebbeinzellen u. d. Keilbeinhöhle. Neunt. Vers. Deutsch. Otol. Gesellschaft, 1900.

9. Ueber d. entzündl. Erkrank. d. Stirnhöhle u. ihre Folgezustände. 1895.

10. Zur Radicaloperation chron. combinirter Empyem der Nase. Internat. Med. Cong., 1897.

11. The Sphenoid Sinus, Trans. Amer. Laryngol. Assn., 1905.

12. Cited by Onodi.

13. Ein Fall v. latenter Keilbeinhöhlenkaries mit Abduzenslähmung, etc., u. Behandlung vom Rachen her., Monatschr. f. Ohrenh. 1903.

14. Ueber d. Therapie d. Entzündung d. Siebbeinzellen u. d. Keilbeinhöhle. Neunt. Vers. d. deutsch. Otol. Gesellschaft. 1900.

15. Die Behandlung d. Krankheiten d. Nase u. d. Nasenrachens, 1906, 357.

16. Symptoms and Treatment of the Sphenoidal Sinus, 1902.

17. Ueber acute u. chron. Erkrankung d. Keilbeinhöhle, Deutsche med. Wochschr., 1892, 1062; Die Krankheiten d. Keilbeinhöhlen, Heymanns Handbuch, 1900, iii, 1173.

Ingals and Spiess[18] bore through the middle turbinate with a trephine. Douglass[19] says: "The best, safest and more rational method of opening the sphenoidal sinus is through the posterior ethmoidal cell. Stacke[20]

Fig. 3.—Probe passed into sphenoid sinus through natural ostium. Showing portion of middle turbinate to be removed.

uses an electric drill, a procedure which is simple and easily carried out, but requires a steady hand and an exact topographical knowledge; otherwise there is great danger of causing serious injury to the dura, optic nerve, internal carotid or sinus cavernosus. Zarniko[1] and Gmeinder[21] use a specially constructed chisel which is considered to be particularly adapted to those cases in which the posterior olfactory space is very narrow. Halle[22] uses a chisel and hammer to open the sinus, followed by an electric fraise to enlarge the opening. Stoeckel[22] also uses an electric fraise, but has had a special handle constructed similar to that of a pistol. He controls the current by means of the trigger and claims the operation can be performed easier than with Hajek's hook. The burs on the fraise are made with the cutting edges on the side.

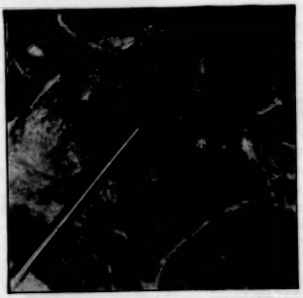

Fig. 4.—After the middle turbinate has been divided by the scissors, the snare is used to remove the posterior end.

Hajek's Method.[24]—Noting that the posterior ethmoidal labyrinth covered about two-thirds of the anterior wall of the sphenoid sinus (pars ethmoidalis) and that only one-third remained free (pars nasalis), Hajek conceived the idea to clear away first the posterior ethmoidal cells in conjunction with whatever part of the middle turbinate was necessary, which would leave the entire anterior wall in sight. He says:

> After complete anesthesia (local or general), I introduce my ethmoid hook into the posterior part of the rima olfactoria against the anterior wall of the sphenoid sinus as high as possible without using the slightest possible force. Since the point of the hook is always directed inferiorly in an injury to the lamina cribrosa is absolutely excluded. I then turn the hook so that the point penetrates the internal wall of the ethmoid labyrinth. When I now press the handle of the hook against the septum I am sure that the hook has penetrated deeply into the ethmoidal labyrinth. The internal (nasal) wall of the labyrinth with that portion of the middle turbinate which lies beneath is torn through by means of a strong pull on the hook. The pieces which remain hanging can easily be removed with a pair of good nasal forceps or the conchotomes of Grünwald or Hartmann. The advantage of the hook in this procedure is not to be underestimated. It is so slender that its point can be easily seen and followed during every phase of the operation, while the curette hinders the light and requires too much room. . . . The bleeding is usually trivial and is almost always controlled by wiping with sterile gauze. . . . I now proceed to resect the anterior wall of the sphenoid sinus.[25] To this end I use my bone forceps, but the ostium sphenoidale must have a definite width before we can introduce them into the sphenoid sinus. This I accomplish by means of my hook tearing the inferior edge of the ostium piece by piece until the opening is sufficiently large to permit the passage of the bone forceps.

This operation, with a few minor details, has always appealed to me on account of its practical soundness in keeping the operative field always before the eye. One phase of the operation I believe, however, susceptible to improvement, viz.: opening the ostium sphenoidale with a hook. As Zuckerkandl,[1] Onodi[26] and others have pointed out, the superior and lateral walls of the sphenoid sinus, so far as thickness and position are concerned, are in direct relation with vital structures and, indeed, it is not uncommon to find dehiscence of either of these walls where the cavity of the sinus is only separated from the cavernous sinus by a thin wall of mucous membrane. Holmes[27] and Onodi[28] report a number of sections where the optic nerve was contained within the sinus.

I noted, while experimenting on the cadaver, that in many instances it required considerable

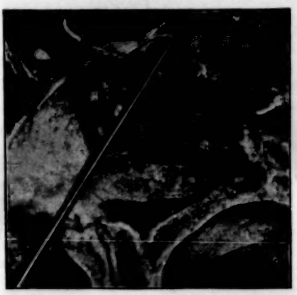

Fig. 5.—Demonstrating the position of Hajek's hook before the superior turbinate is cut through.

18. Zur Chirurgie d. Sinus sphenoidalis, Arch. f. Laryngol., vii.
19. Nasal Sinus Surgery, p. 162, Phila., 1906.
20. Ueber d. Verwendbarkeit d. Elektromotors bei Operationen inbes. b. Nasen- und Ohroperationen, Arch. f. Ohren., 1897.
21. Instrument Catalogue of H. Pfau, Berlin.
22. Berliner klin. Wchnschr., 1906, 1372.
23. Die breite endo-nasale Eröffnung d. Keilbeinhöhle mit d. Fraise, Arch. f. Laryngol., xvii.
24. Zur Diagnose u. intranasalen chirurg. Behandlung d. Eiterungen d. Keilbeinhöhle u. d. hintern Siebbeinzellen, Arch. f. Laryngol., 1904, xvi.
25. Compare, Onodi, A.: Zur Frage d. endonasalen breiten Eröffnung d. Keilbeinhöhle, Arch. f. Laryngol., 1904, xvi.
26. Die Dehiszenzen d. Nebenhöhlen d. Nase, Arch. f. Laryngol., xv.
27. The Sphenoidal Cavity and Its Relation to the Eye, Arch. Ophth., 1896.
28. Das Verhältnis d. Nervus Opticus zu d. Keilbeinhöhle u. inbes. zu d. hintersten Siebbeinzellen, Arch. f. Laryngol., 1903, xiv.

pressure to force the hook through the ostium, especially where the opening was small and situated high in the posterior olfactory space. Often the hook would break through so suddenly that one had for the moment little control as far as its striking the superior or lateral wall

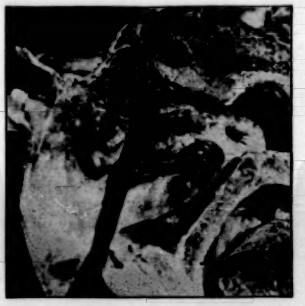

Fig. 6.—Removing the débris after the hook has been used.

was concerned. In these cases had a thin wall been present the overlying structures would only have escaped injury by the merest chance. With this thought in mind I had an instrument constructed (Fig. 1) which would obviate this difficulty. It consists of two long thin branches with a half knob on each end which when closed form a small ball. On pressing the two handles together these knobs open and lock at the desired width.

This instrument, closed, is introduced into the ostium, being prevented from going through suddenly onto the superior or lateral wall[29] by a protector situated a few millimeters behind the knob, is opened by a slight pressure of the fingers and drawn out. The knobs are provided with a cutting surface behind which readily goes through the mucous membrane and thin bone. This procedure may be repeated until the ostium is considerably enlarged. When the bone is thick the operation can be finished by means of the excellent bone forceps of Hajek.[24] I have made a slight modification of this instrument (Fig. 2), having the nasal part bent to conform more with the position of the antero-inferior wall of the sinus.

Fig. 7.—Introduction of the author's evulsor into the natural ostium of the sphenoid.

THE OPERATION.

The operation in detail which I find acceptable to all cases is the following: The lateral wall of the nose, including the septum, is thoroughly cocainized with a 20 per cent. solution, a few drops of adrenalin chlorid having been added. After anesthesia has reached the point beyond tactile sensibility the posterior half of the middle turbinate (Fig. 3) is removed by means of the scissors and cold snare (Fig. 4).

After bleeding is controlled by lightly wiping with gauze soaked in adrenalin chlorid, the superior nasal passage with the superior turbinate is exposed to view. Hajek's ethmoid hook (Fig. 5) is now employed after the method of the author,[4] and with two or three strong pulls the posterior ethmoid cells are broken through, the débris being removed with a Grünwald-Hartmann conchotome[30] or a similar instrument (Fig. 6). The sphenoidal sinus is now either exposed to view or opened completely up, depending on the anatomical construction of the part. Should there be present a spheno-ethmoidal recess, the ethmoidal portion of the sphenoid wall will remain intact; if, on the other hand, the superior turbinate forms most of the anterior sphenoidal wall, breaking it down will naturally expose the sinus. We will suppose, however, that, after removing the posterior ethmoidal cells, the anterior wall of the sphenoid has not been injured and we are able to see the ostium with pus oozing out. It is now an easy matter to introduce the evulsor[31] (Fig. 7), and with a few well-directed pulls to open the ostium 8 to 10 mm. in diameter (Fig. 8). The ostium is really never so small as it appears, because the mucous membrane, not only from the nasal side but from the interior of the sinus, joins to make more or less of a diaphragm. The bone at this point is paper thin, gradually becoming thicker toward the base and basilar process. The bent forceps of Hajek are now used (Fig. 9) and as much of the bone removed as is necessary to insure a permanent opening which, in my opinion, should reach as deep as the floor of the sinus (Fig. 10).

No structure of the nose shows greater tendency to granulate after operation than does this sinus and, after making a large opening, one would be surprised to find this opening, in the course of a few weeks, almost closed by these granulations[32]—not the sinus itself filled, but the ostium occluded. On

Fig. 8.—Drawing the evulsor out after opening it, thereby enlarging the opening in the anterior of the sinus.

29. In those cases of "shut in" empyema, where the ostium is occluded, there usually is present pulsation of that thin membranous portion of the anterior wall previously occupied by the ostium. In any case the use of the sound will demonstrate the former position of the ostium.

30. Atlas d. Anat. d. Stirnhöhle, der vorderen Siebbeinzellen u. d. Ductus Naso-frontalis, J. Bergmann, 1900.

31. Compare, Killian, G.: Die Probepunction d. Nasennebenhöhlen, Münch. med. Wchnschr., 1896.

32. Schmidt, M.: Die Krankheiten d. oberen Luftwege, 1897., 2d ed.

this account the operations through the bulla, posterior cells and those making small openings are not to be recommended. The condition of the mucous membrane is frequently found to be swollen, velvety and nodulated. Under such circumstances it is better to wait two weeks and observe whether this inflammation will not subside of itself. If granulations remain at the end of this time, the floor of the sinus may be gently curetted after cocainization, but never the superior or lateral walls. Concerning the use of the curette in this sinus, authors are at variance. Hajek[4] and Onodi[15] condemn the practice, while Zarniko,[1] Schaffer,[17] Stacke,[20] Bresgen and others carry it out, but all agree that it is dangerous, particularly on the superior and lateral walls, and should be done with all gentleness and caution. I agree with Hajek, that it is, for the most part, superfluous and may be dispensed with, except in chronic cases where localized spots resist healing.[22] The bleeding which occurs is minimum and can easily be controlled.[24] Four cases have been reported in which postoperative bleeding from the anterior wall occurred.[16, 24, 33, 34] This was controlled by tamponade in all except that of Myles. His, however, required ligation of the external carotid.

Fig. 9.—Hajek's modified forceps biting away the anterior wall piecemeal; last stage of the operation.

If, on the other hand, the resulting hemorrhage becomes copious, syringing with a 1 to 100 solution of citric acid or pressing a cotton tampon soaked with adrenalin in the sinus will control the bleeding. The disadvantage of the latter procedure is the tendency to secondary hemorrhage. As a precautionary measure in these cases a tampon of iodoform gauze prevents reactionary hemorrhage. The tampon is removed after 48 hours. This danger is, nevertheless, slight when one considers that the only artery standing in the way of being injured is the nasopalatine, running over the floor of the body of the sphenoid. Zuckerkandl states that this is the smallest branch of all the turbinal arteries.

The sinus cavity is now swabbed out with a gauze tampon soaked in hydrogen peroxid, a little thymol iodid (aristol) insufflated and a piece of cotton laid in the anterior nares.[35] Tamponing of the cavity is a personal equation with the operator. Hajek[24] rarely uses one, Schaffer[17] and others invariably follow this line of treatment; in any case only loosely packed iodoform gauze is used. The subsequent treatment[36] consists in washing out the sinus with a warm boric acid solution,[37] observing that the mucous membrane returns to normal and, above all, to prevent granulation tissue forming on the edges of the wound,[38] the object being to keep the opening permanent, thus to permit free drainage of secretion which may subsequently form.[39] To this end after ten days the edges should be lightly cauterized with chromic or trichloracetic acid, continuing every week until they are fully scarred over, which usually requires about six weeks. Edematous swelling of the mucous membrane may occur after application of the acid, but they are quite evanescent and vanish without special treatment. Complete healing usually takes place in from three to eight weeks, depending on the degree of inflammation and extent of operative interference.[40]

The advantages of this operation are:

1. The field of operation is always in sight.
2. The preliminary opening of sphenoid from within outward thereby incurs no danger to structures behind.
3. There is a permanent opening which lessens the danger of recurrence.

Fig. 10.—Result of complete resection of the anterior sphenoidal wall, after the operation.

ABSTRACT OF DISCUSSION.

ON PAPERS OF DRS. GIBSON AND SKILLERN.

DR. ALBERT H. ANDREWS, Chicago: I was interested in the measurements and averages given by Dr. Gibson, but as I listened I imagined a patient sitting before me with pus trickling down his posterior pharyngeal wall and perhaps some

33. Gleitzmann: Trans. Am. Laryngol. Assn., 1895.

34. Myles, R. C.: Trephining and Curettage of the Sphenoidal Sinus. Profuse Secondary Hemorrhage Requiring Ligation of the External Carotid. Laryngoscope, p. 293, 1903.

35. Compare, Cordes, H.: Zur Behandlung d. Keilbeinhöhlenerkrankungen, Monatschr. f. Ohrenh., 1899, and Winkler, E.: Footnote 8.

36. Compare, Guye, A.: Vier Fälle v. Ausräumung d. Keilbeinhöhle b. rezidivierenden Nasen Polypen. Berlin. klin. Wchnschr., 1902.

37. Compare, Curtis, H. H.: Who reports a case in a girl of 18, who, after a simple syringing out of this sinus, was confined to her bed for two days with most violent pain and vomiting and all the symptoms of meningitis, with the exception of the temperature. Laryngoscope, 1904, 806. Undoubtedly dehiscence of the superior wall existed in this case.

38. After the operation the edges of the removed portion of the sinus wall are naturally bare and must become entirely covered with fibrous tissue before the secretion ceases. This new scar tissue will consist of two layers, a ground layer of fibrous tissue and a superficial layer of epithelium. The fibrous layer is formed from the granulations which spring out of the bone, while the epithelial layer grows from the neighboring mucous membrane over the fibrous or granulating layer. A normal healing can only occur when these layers grow in harmony. Should the epithelial tissue grow slowly, the granulations from the bone will become too strong to be covered and coalesce, thus again closing in the sinus. As a gauze packing in the cavity stimulates these granulations, it should be dispensed with in the after-treatment.

39. Compare, Hajek, M.: Fall v. Empyem d. Keilbeinhöhle m. bedrohlichen Stauungserscheinungen; Endonasaloperation nebst ein. Bemerk. über Diag. u. Therap., Wien. med. Wchnschr., 1895.

40. Compare, Holmes, E. M.: Suppuration of Frontal, Ethmoid and Sphenoid Sinuses, Boston Med. and Surg. Jour., 1903, 337.

lesion of the eye, and I wondered how much good those averages would do me when I came to consider his case. Averages are all right from the anatomic standpoint, but from the clinical standpoint—when one works with the brain immediately above, and dangerous blood vessels immediately at the side, and nerves which one must let alone in close contact with the cavity—averages are of no value. It is the individual case which is to be considered. In doing some cadaver work it occurred to me that the posterior pharyngeal wall and the back wall of the sphenoid cavity form the arc of a circle, of which the anterior nasal spine forms the center. In making measurements it was observed that the distance from the nasal spine to the posterior pharyngeal wall was practically the same as to the posterior wall of the sphenoid cavity. If one can pass a probe in the direction of the sphenoid sinus as far as he can pass it directly backward, he must of necessity be in the sphenoid cavity and no place else. It seems to me this is a better rule than any other measurements can be.

While the curved forceps shown by Dr. Skillern has the advantage of allowing one to cut downward a little more, it interferes with the turning of the forceps to one side, as one must do to enlarge the opening laterally, as one can not well turn a curved forceps sidewise in the nose. An anatomic arrangement which must be borne in mind in cutting away the anterior wall is this: The anterior wall close to the septum is very thick and strong, while on one side a little out, one-third or one-fourth of an inch, it becomes very thin, as suggested, sometimes only membranous. These cavities should be explored very much more frequently than they are. By using a probe with a bend it can be done in the majority of cases without the necessity of removing the middle turbinate or resorting to any other surgical procedure, and it has happened to some of us to find a great many more cases of sphenoid disease since we have made the exploration of the sphenoid a part of our routine examination.

DR. ROSS H. SKILLERN, Philadelphia: In answer to Dr. Andrews, the forceps can easily be turned when in position, and I think can be entirely rotated while in the nose. One is thus enabled to bite in any direction. The curve is not sufficient to interfere in any way with mobility.

ALVEOLITIS OR SOME PATHOLOGIC CONDITIONS ARISING FROM INEFFICIENT CARE OF THE MOUTH.*

M. H. FLETCHER, D.D.S., M.D., M.S.
CINCINNATI.

Civilization brings with it the necessity of conscious intelligent care of the body, in order that good health may be enjoyed for the allotted three score years and ten. This is particularly true in case of the teeth.

I believe it possible, by the proper selection of prepared foods, to live a moderately healthy life without teeth, yet to live under such conditions could hardly be called enjoying good health. To have good teeth and healthy gums is one of the first requisites of perfect health. The belief that everybody can secure this condition, even by proper care, may be utopian, but this ideal can be nearly attained by most persons. Not only this, but a large percentage of diseased teeth and gums can be restored to comfort and usefulness by proper treatment and continual cleanliness. If every surface of every tooth could be kept perfectly clean one would have neither decayed teeth nor diseased gums. It is rare to see a mouth as clean as it is practicable for one to be kept, yet much time, money and energy are spent for luxuries and fads, and much is also paid to doctors and dentists for the repair of ills that could be prevented by conscious, intelligent care.

To take no care of the teeth, or inefficient care, seems to be almost a universal habit. One patient put it very nicely when she said: "I find I have been cleaning my conscience all these years instead of my teeth."

Among the most prevalent diseases, as well as the most surely preventable, is that which attacks the alveolar process, resulting in its necrosis and the loss of the teeth. This disease is known by several names, but commonly by that of pyorrhea alveolaris. In my opinion it is almost wholly brought about by calcareous deposits which can be kept off by the patient.

NOMENCLATURE.

The names by which the disease is and has been known are serving their purpose, but for simplicity and clearness the usage in other branches of surgery and medicine will be adopted. That is, the name of the organ or part involved will form the foundation or generic name,

Fig. 2.—First lower molar lost from alveolitis. Second is beyond recovery. Third has recovered.

Fig. 4.—Lower first and second molars. The first molar and bicuspid have been curretted, the second molar has not. Picture taken three months after treatment. Typical of many cases.

Fig. 3.—Superior incisors and canine after curetting. With wire splints to sustain them until recovery.

the nature of the disease being indicated by a suffix, and the stage or condition by a descriptive adjective. Under the name "gingivitis," inflammation of the gums follows the same rule.

The alveolar process being the part primarily involved in the disease under special discussion, the term "alveolitis" will be used in this paper in the sense above indicated, and the different stages of the disease distinguished as acute, chronic, suppurative and necrotic alveolitis. The adjectives "tuberculous," "syphilitic," "pyemic," etc., are also usable under this plan, and each ascribes a definite pathologic characteristic to the disease whose name it modifies.

Riggs' disease is a better term than pyorrhea alveolaris, since the latter name describes only the suppurative stage, and does not permit of use to describe other stages without producing a paradox or a contradiction. Such terms as "Bright's disease" and "Graves' disease" are, however, being eliminated from general medicine,

* Read in the Section on Stomatology of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

* Owing to lack of space, the article is here abbreviated by the omission of parts of text and illustrations. The complete article appears in the author's reprints.

and purely descriptive terms, formed on the principles indicated above, are being substituted.

The term "interstitial gingivitis" is subject to the criticism that it implies that the soft tissues are the ones primarily involved by the inflammation, whereas in this disease the bone seems to control the health or disease of the soft tissues overlying it. Subsequent to the initial lesion in alveolitis, the gums seem to have little more to do with the disease than the skin does in cases of underlying bone disease.

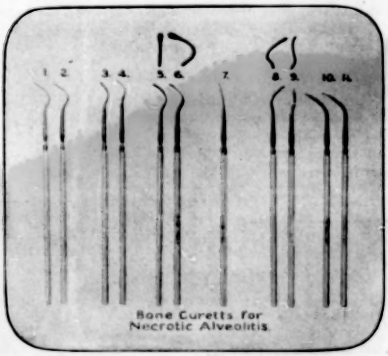

Fig. 6.—Bone curettes for removing dead and diseased tissue about the teeth and in deep pockets. The longest ones will reach beyond the apices of the roots.

PATHOLOGY.

Alveolitis in its progress includes all the processes known to other surgical diseases of bone, viz., acute, chronic, suppurative and necrotic stages. In my opinion, the initial, exciting cause, in at least nine-tenths of the cases, is the formation of calcareous deposits about the necks of the teeth. The tartar being adherent, Nature

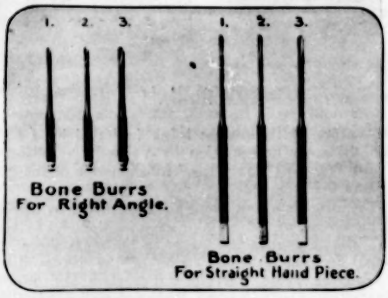

Fig. 7.—Alveolitis burs for both straight and right-angle hand pieces, for the same purpose as the curettes. The burs work more rapidly and thoroughly and are usable in a majority of cases.

can not remove it, and the inflammation becomes more extended and violent, resulting in raw tissue and open blood vessels at the point of contact with the tartar; this naturally results in the formation of pus, in small quantities at first. The surrounding of a foreign body by pus or the floating of a foreign body in pus, until the surface is reached and an opening made for its discharge, is a familiar process in the case of a thorn or splinter in the flesh.

Tartar against the gum margin is a foreign body, and Nature endeavors to dispose of it just as she would the splinter. The tartar, being fixed, only continues the irritation, with pus as a continual result. The thin edges of the alveolar process, being continually attacked by pus or osteoclasts, soon begin to melt away, and the membranes covering the bone and roots of the teeth disappear with it. So long as the irritation remains, this process continues, its rapidity varying with environment and individual. Thus it is seen that Nature in this particular malady, if unassisted, in her attack on her enemy, the calcareous deposits, destroys the tissue about teeth until the tooth with its attached tartar is extruded, thus finally accomplishing what she started to do (Fig. 2).

The acute or incipient stage of alveolitis may continue for a lifetime, with no appreciable inconvenience or pain to the patient, the progress often being so slow that there is nothing to reveal the presence of the disease aside from the receding of the tissue about the necks and roots of the teeth. But infection may take place about one or more teeth at any time, producing periostitis, either inside or outside of the socket, proceeding from one stage to another, ending in necrosis either of limited or extended degree.

Fig. 5.—Superior molars and bicuspids when antrum is involved. The wire passes through the opening into antrum.

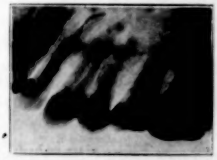

Fig. 8.—The case reported in which disease from superior lateral had perforated to floor of the nose.

Fig. 9.—Showing a typical case in which necrotic alveolitis has perforated the antrum above first molar. The wires show the opening into the antrum to be about the diameter of the crown of the tooth. Typical of thirteen cases.

ETIOLOGY.

Abundant evidence can be presented to maintain the position that, without local irritation, destructive diseases of the soft and hard tissues about the teeth and alveolar process would be confined to those due to traumatisms, thrombosis, nutritional changes and bacterial stomatitis, with now and then an infection from the circulation, as in other tissues; but these affections would then be attributed to their special causes and treated accordingly.

The most frequent point of attack for alveolitis is in the septums between the teeth, where tartar is not disturbed by lips, tongue, food or brush; but any place

about the necks of the teeth, where tartar is undisturbed, is apt to be the point of attack (Fig. 3).

The opportunity for the entrance of infection to the alveolar process is almost unlimited, for calcareous deposits about the necks of the teeth are found in every adult human mouth and in the mouths of most children.

The quantity of tartar and the irritability of the soft tissues in its presence varies in different individuals, and with each individual according to his power at different times to resist disease after its onset.

Autointoxication or lack of resisting power, however caused, makes one more susceptible to other diseases as well as to this; but a low state of health could hardly be the sole cause of an infectious disease. The microbes of infection are ever present in great abundance, Miller having isolated more than one hundred different kinds of bacteria from the juices and deposits in the mouth. So, when the gums and periosteal membrane are sore and bleeding from the impingement of tartar, bands, the wedging of food, or any other irritant, infection may readily start and the disease follow. Lesions of the gums about the teeth are so universal that the wonder is, not that there are so many diseased mouths, but that there are not more.

A lesion of the gums, because of immediate proximity to the bone, seems pre-eminently a suitable place for the beginning of any of the surgical infections of bone. The infections to be considered in alveolitis are those that produce osteomyelitis, caries or tuberculosis of bone, gummata or syphilitic lesions, and actinomycosis. The ultimate result in each one of these infections is dead bone.

Necrosis from lead, mercury, phosphorus and all other chemical causes, are not to be considered here, since their etiology is apparent.

The diagnosis, then, in any single case, lies between an infection by pus-producing germs, such as accompany osteomyelitis; tuberculous germs, which produce caries; syphilitic germs, which produce gummata; and actinomycosis. The last named produces "lumpy jaw" in cattle, and is not frequent in man, especially in this country. It is not uncommon, however, in countries where camels are used as domestic animals, and is confined largely to these countries. It is sometimes seen in cattle in the United States, and now and then in man in cattle districts; but in this paper it hardly need be considered in the light of a factor in alveolitis.

Then, in consideration of the above, we have three kinds of bacteria to consider as the most probable sources of infection, namely, pyogenic, tuberculous and syphilitic.

SYPHILIS.

The consensus of opinion seems to be that syphilitic infections are far less numerous than either pyogenic or tubercular infections. In my opinion this is especially true in regard to the alveolar process, although the mouth seems particularly favorable to other lesions of syphilis. In patients who seem to be syphilitic, recovery is much slower, the infected tissue being more sensitive, and persisting in showing inflammation long after other patients with other infections have recovered. The characteristic thickening of the periosteum in the gummata of syphilis can be felt over the diseased bone in the neighborhood of the apices of the teeth, either on the buccal surface or inner surface, or both. Gummata in the periosteum must be distinguished from hardened lumps at the apex of dead teeth or exostosis of bone. Gummata usually appear, however, on the septum of bone between the roots rather than over them. This is because syphilitic bone is more apt to be in the cancellous portion of the body or between the roots. These conditions are rare, however, in comparison with pyogenic and tuberculous infection. Local treatment is practically the same in all infections, excepting that it must be continued longer in syphilis. Syphilitic infection may be either congenital or acquired. The congenital form appears more frequently in the bones of children, and particularly in the long bones, but the acquired form frequently shows in the bones of the head and face, the alveolar process and maxillæ being no exception. With our present incomplete knowledge, however, syphilitic alveolitis is not easy to distinguish from tuberculous alveolitis.

OSTEOMYELITIS.

In considering osteomyelitis, which is pyogenic, it is to be remembered that in a typical case the seat of trouble is in the marrow of one of the long bones, oftenest the thigh bone of a child or youth, although it may occur in the periosteum, in the form of a felon, for instance. It is considered that the infection comes from the blood and oftenest finds a lesion or point of least resistance in the marrow of some bone and begins its work there. The bony walls being unyielding, the patient's suffering is intense, and the spread of the infection to the surrounding marrow and bone is rapid. The destruction and pain continue to increase as long as there is no exit for the pus and other products of inflammation. Early interference by the surgeon is demanded here, for if time must elapse for the pus to burrow its way to the surface through bone and flesh, many days at least, and probably many weeks must pass, during which time much tissue is destroyed and untold suffering endured.

The above description, if somewhat modified, applies to an abscess at the apex of some dead tooth, or an infection under the gum tissues, either from the blood or by infection from a lesion at the alveolar border. Very acute and painful infections about the alveolar process imply that the pus is confined at some depth below the margin of the gums. If the infection were nearer the gum margin, either in the socket or on the alveolar process, the discharge would either not be confined or would make its exit at an early stage of the disease, giving comparatively little pain in either case. The infection remaining, however, continues its destructive work, and a chronic stage of suppurative alveolitis or true pyorrhea alveolaris is the result.

If not interfered with, this condition may continue indefinitely, now and then assuming an acute stage when new foci become infected, quieting down again when the sinus is opened to the surface. But each time this occurs there is loss of more bone in the alveolar process or in the deeper cancellous portion, often extending into the body of the jaw, and many times into the antrum. This destruction continues slowly or rapidly, according to the acuteness or chronic activity of the disease, until the tooth or teeth are lost. When the tooth is out, if the infection is not mixed with other germs, such as tuberculous or syphilitic, healing becomes prompt and complete in the normal time for the building of bone structure, that is, in two or three months. Under proper surgical treatment, however, healing can be made just as prompt and complete, and the teeth retained and made useful, provided the dead and infected bone be removed before the foundations of the tooth are too greatly destroyed (Fig. 4).

TUBERCULOSIS.

In considering tuberculous infection as a cause, my experience makes me believe that alveolitis in all its stages, after its initial lesion, is more largely due to this infection than to any other.

Descriptions, by two of our best authors and surgeons, of this disease in other bones than the alveolar process, will better serve than my own, as a description of tuberculous alveolitis and its ravages. The action of tubercle bacilli on bone, as here described, is particularly applicable to carious alveolitis.

Park[1] goes into minutiæ in regard to the "infectious granuloma" of Virchow, which plays so large a part in the slow destructive process in caries of bone. This granulation tissue is the effort on the part of Nature to repair the damage done by tuberculous or other infection, but the granules also become the seat of infection and serve as a further means of increasing the progress of the disease, especially that of tuberculous type. Carious necrosis into the alveolar process and jaw bones seems exactly the same in character and extent as this infection in other bones, and in my hands has yielded to the same character of treatment that has proved successful on other bones (Fig. 4).

Although many microscopic tests have been made, no satisfactory results have been obtained. Probably none can be obtained until the work is taken up under proper laboratory environment for both culture and microscopic tests; and even then the work might be uncertain, as Miller has shown[2] in his endeavors to find a special bacterium of this disease. He sums up his work as follows:

> From these experiments, we might conclude that, if there is a specific bacterium of pyorrhea alveolaris, it does not readily grow on gelatin, a result which is of value in so far as it indicates that in further experiments on this subject, media should be employed which admit of being kept at the temperature of the mouth. At the same time the thought suggests itself that possibly the bacterium of pyorrhea alveolaris, like so many mouth bacteria, is cultivable on none of the artificial nutrient media, which would of course render all experimenting useless.

TREATMENT.

In the first place, in extensive cases, the tissues will need to be cocainized, a 5 to 10 per cent. solution being injected into the pockets. If the tissues are very sensitive, a weaker solution can be injected into the gums, the same as when teeth are extracted. The periosteum is very sensitive, but bone is not so, and dead bone not at all so. The use of cocain must be determined by the conditions. I use it as sparingly as possible, for the reason that if enough is used to produce anesthesia it usually produces a sleepless, disagreeable effect, if it does not prostrate the patient for a day or two. Usually the cocain can be postponed until the point of curetting and burring is reached.

Next, all calcareous deposits must be removed. There are hundreds of instruments made for this purpose, each operator having his own preference in instruments and his own methods of use. But the deposits must be most thoroughly removed and the teeth and roots polished with an orange stick and pumice, floss, discs or brush, or whatever the operator can best use to restore the teeth to a smoothness equal to that they originally had.

Experience shows that scratches and grooves on the roots from instruments are nearly always present, although they should not be. These scratches, when under the margin of the gums, do not cause the roots to decay nor prevent the tissues from becoming healthy; but calcareous deposits remaining, however slight in amount, will continue to irritate and increase, resulting in a repetition of the various stages of the disease, namely, initial lesion, increased inflammation, infection and destruction of bone. One of the most important parts of the treatment consists in teaching the patient how to keep the teeth free from calcareous deposits. If tartar is not allowed to form about the gum, it will not form below, and the disease is prevented; otherwise it is likely to return (Fig. 1).

After removal of deposits comes the removal of necrosed bone. No repair is ever complete unless this is done. It is oftenest done, however, by Nature herself without intentional aid from the doctor.

Now, it would seem the rational thing for the physician to seek out the points of attack, and by conscious effort to assist Nature by tearing down and removing her enemy's citadel, the infected and dead bone, be it ever so small an amount, thereby reducing the enemy's forces and stimulating Nature to a renewed and stronger effort, and thus not only shortening the time of repair, but making it more sure. In this way recovery can be induced in many cases which would otherwise end unfavorably. The progress of tuberculous infection in bone is so slow that many patients, even if not entirely cured, may be much relieved, in that the disease becomes quiescent, and the affected teeth, which otherwise would be lost, remain useful for years.

The conscious effort referred to consists in the use of delicate bone curettes and suitably shaped burs for removing dead bone from about the necks and roots of affected teeth. Examination should first be made about the neck of every tooth with a delicate probe; one of the bone curettes is usually good for this purpose, but a more delicate instrument, like a smooth broach, is often necessary. The sense of touch readily reveals the presence of bone not covered by soft tissue. When such is present there is very little if any sensitiveness, whereas if gums or periosteum still cover the bone, the patient quickly responds to the pain and the touch reveals the difference between live and dead bone. No matter what one may believe as to the causes of the disease, the fact remains that, in the mildest cases of alveolitis in its second or chronic stage, there is always more or less death of the bone about the teeth, and the dead and diseased tissue should be removed in order to give Nature the most assistance.

The third or necrotic stage is that in which the alveolar process is more deeply involved, the necrosis usually progressing along the root in one tract, until near the apex, then gradually encircling the root, also continuing its ravages into the maxilla. In the upper jaw the infection often goes into the antrum, now and then into the floor of the nose, and many times destroys large sections of the cancellous portion of the superior maxilla (Figs. 5 and 9).

In the treatment of these cases, packing is not called for except in instances of extensive removal of tissue, such as curetting the antrum or the removal of considerable portions of the body of the bone.

If systemic treatment is demanded it should be directed toward the restoration of normal health by such means as the elimination from the diet of foods which do not become wholly digested and assimilated, and the copious drinking of pure water. If the local trouble

1. Treatise on Surgery: Tuberculosis, I, 160.
2. "Microorganisms of Human Mouth," p. 329.

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is complicated with other diseases of moment, the general practitioner or specialist should take charge of these.

TIC DOULOUREUX.

Besides these deep-seated extensive cases, there is another class which calls for knowledge of local pathology and great keenness of diagnosis. They are non-suppurative and attended by more or less neuralgic pain, sometimes a matter of small discomfort, again reaching the magnitude of tic douloureux. They usually occur about a perfectly good tooth, and there is no evidence of inflammation, either on inspection or on percussion. The one symptom which calls attention to them is entirely subjective; that is, the patient complains of discomfort or pain in the neighborhood. The tooth affected is usually next to one more deeply affected or next to the space where one has been lost. With a smooth broachlike probe inserted close to the tooth some place will be found which is not sensitive, usually approximating the space where the adjoining tooth was, or the tooth more deeply affected with the disease. The bone is found nude of periosteum and eburnated, that is, abnormally hard. This hardened condition is easily detected by the touch; the bone is very hard to cut even with a bur, and is not sensitive. The treatment consists in the removal of the eburnated bone with a curette or bur; the bur is the better.

Disease of the periosteum, wherever found, is usually accompanied by neuralgic pains. In view of this fact, I have been led to believe[3] that tic douloureux might be due to a disease of the periosteum, starting as above described, and continuing even after all the teeth have been lost.

Subsequent experience has very much strengthened my belief in this theory, and I believe it lies with the stomatologist to work out this hypothesis and find the proper treatment for this most distressing malady. At the present time I would call this variety periosteal alveolitis from tubercular infection, or periosteal caries.

DIAGNOSIS.

The diagnosis of chronic cases of alveolitis needs suitable instruments, sensitive touch and great care; and the treatment, in addition to this, requires a perfect knowledge of the anatomy of the structures and their pathology.

To operate in any of these cases is surgery and not dentistry, so that the stomatologist also needs to be skilled in operative surgery to a degree which gives him suitable knowledge and confidence in himself to handle a patient undergoing the removal of part of the alveolar process either above or below. He must also be capable of opening and properly treating the antrum of Highmore, and of knowing if this cavity is diseased beyond its connection with the teeth, or whether it is diseased at all or not, and of handling a patient under collapse, either from shock or local anesthetic. Further, the operator should be so in touch with his patient and the extent of the operation as to know whether the operation should be performed under local or general anesthesia, and whether it should all be done at once or at intervals of a few days or weeks; for general and systemic complications from secondary and acute infection may occur at any time.

These features will present themselves more strongly when a history of some of the cases is given and the radiographs are shown.

3. Fletcher, M. H.: Periosteal Caries, THE JOURNAL A. M. A., Sept. 2, 1899, xxxiii, 585.

INSTRUMENTS.

Under the impetus, first, of an effort to be thorough, then of surprise at the prevalent ravages of the disease, then of a desire to learn its full extent and how to treat it, I found myself bewildered at times. Consequently, I began to invent instruments which would reach the extended tracts of necrosis. These instruments are here presented for criticism (Figs. 6 and 7).

The curettes, or hand instruments (Fig. 6), are all of the hoe and hatchet type, varying only in size of blade and length and shape of shank. The attempt is made by these variations to reach any extended tract of necrosis. The necrosed portions are usually friable—that is, in the state of osteoporosis—and can easily be cut away with the curettes; but certain phases of the disease and certain kinds of infection often result in osteosclerosis; that is, hardened or eburnated bone, on which the curettes make little headway. For cutting these hardened bones I have made some extra long bone-cutting burs (Fig. 7), both for the straight and right-angle hand-pieces. The contra-angle seems to be more suited to the work, however, than the right angle. The burs for the contra-angle will reach all cases in the lower jaw and most of the upper, but a bur two and one-half to three inches long—that is, one long enough to reach to and into the antrum—is often necessary for the upper jaw.

Experience has taught me that the burs must be of the fissure-bur type, with rounded ends, and small enough to cut away the septums of bone without injury to the roots. Often this can not be done with any bur, since it would necessarily be so delicate that it would break very easily, an accident which occurs quite frequently. The same thing also occurs with the curettes. The alveolitis burs are made without the usual shoulder near the head in order to prevent them from breaking so easily. In many instances the roots of teeth are so close to those adjoining that no instrument sufficiently strong can be inserted into the space.

OPERATIONS.

On account of proximity to the floor of the nose, the antrum and the roof of the mouth, necrotic and suppurative alveolitis may be more serious in the upper than in the lower jaw, since all these cavities may be involved singly or at once. It has fallen to my lot to be obliged to remove much of the alveolar process and to excavate more or less extensively into the cancellous bone of the superior maxillary.

My records show that in the past twenty-two months I have treated 112 patients with necrotic and suppurative alveolitis. This does not include patients in whom moderate amounts of tartar have been removed and the teeth polished. Out of these 112 patients, in 13 the antrum was perforated; 17 had acute osteomyelitis; 8 a considerable portion of the alveolus and bone from the maxilla was removed; 5 had symptoms approaching tic douloureux and all required more or less curetting of the alveolar process and maxilla. Twenty-four had one or more teeth that could not be saved. In one of the antrum cases the disease was caused by intranasal disorder and has been troublesome for five years. Two patients went to a nose specialist, and I do not know their later condition. In the other ten the conditions have been cleared up, as shown by transillumination, and the patients have been discharged, so far as antrum trouble is concerned.

Affections of the antrum caused by the teeth are much more amenable to treatment than when the disease is from intranasal disorder.

In one instance, in the lower jaw, it was necessary to remove all the teeth and alveolar process, back of the canine on one side, curetting extensively into the body of the bone. In another the patient was operated on by a general surgeon and much of the body of the lower jaw removed on one side, in addition to all the alveolar process from the canine back. The patient was afterward sent to me to have the upper teeth and jaw treated. I found extensive necrosis running back into the cancellous bone from above the superior lateral and central. The harder plates of bone under the floor of the nose and the antrum had not been perforated, but their shapes could easily be felt with the instrument. This patient has been under treatment for six months and is nearly well.

By proper handling, these patients can be conservatively treated and the structures often induced to heal without the radical operation of extended removal of maxillary substance, as is now so frequently done in the hands of the general surgeon.

The laws of regeneration do not permit of complete healing of bone tissue inside of several weeks at the shortest, and often require several months, so that patience and careful watching are necessary on the part of both patient and doctor. One patient now on my list for nearly a year, who would not submit to a radical removal of the cancellous bone in the superior maxillary, has submitted to a small amount of removal from time to time and is gradually recovering under two dressing treatments a week. This case, however, was the result of a dental abscess arising at the apex of the superior lateral which had discharged into the floor of the nose (Fig. 8).

The extensive ravages of alveolitis must be seen to be fully understood, and it is my desire that stomatologists may take up this task and unitedly work out the complete history of the disease, together with the most approved methods and instruments for its successful treatment.

REGENERATION.

At the present time, the greatest uncertainty about alveolitis is in regard to the origin of the cause or the kinds of infection producing it. The symptoms are nearly the same in all instances, and the treatment is practically the same in all cases, namely, the removal of deposits and of any necrosed or dying tissue, which constitute the hindrances in Nature's path to recovery.

After curetting and burring have been done, the cavities should be washed out with a warm antiseptic solution to remove the cuttings. The blood should be allowed to clot in the cavity. My plan is to be careful not to disturb the blood clot so long as it remains aseptic. If there is a tendency for pus to form, the wound should be washed out every one, two or three days, according to conditions, and, if pus continues after ten days, a second, third or even more attempts must be made to remove the offending material.

Aseptic blood clot is Nature's "false work" or scaffolding on and into which she builds all new tissues, no matter of what kind. The less the healthy clot is disturbed, the more prompt is the repair. In the blood clot is formed the granulation tissue of repair, which is the second stage of the building of new tissues. Any disturbance to these granules is also a hindrance to repair; hence packing is seldom called for.

Following the formation of granulation tissue is its gradual change into tissue of the kind from which the granules sprang. This process continues until the wound is healed. The hindrances to this normal process are foreign bodies, dead or dying tissue, and the presence and increase of bacteria. Nevertheless there is a continuous and never-ceasing effort to extrude or to tear down and carry away any foreign body.

This new or granular tissue thus endeavoring to envelop the diseased or dead tissue is called the involucrum. Dead tissue thus completely involved is attacked from every point, and often an enemy thus attacked can be destroyed, whereas, if only partly surrounded, it would hold its ground.

This process is one of the most common things to be seen in the human mouth, especially in patients who have been or are being treated for alveolitis. When the crown of a tooth has disappeared, the involucrum begins to grow over the edges of the root, and at times a portion of the root may be completely enveloped and finally become absorbed. Inflamed gums, from irritation of tartar or other causes, constitute an attempt to involve and destroy the enemy and replace lost tissue.

And now to the point of the above explanation. What really happens in a large number of cases treated for suppurating or necrotic alveolitis is that an effort is made by the doctor to remove the deposits. Some doctors may try to remove dead bone. In any event, the tissues are wounded in the effort, and all or most of the deposits and dead bone removed and the limiting zone or membrane at least partly broken up. Thus Nature is stimulated to a new and vigorous effort to repair the damage done. The involucrum grows up and around the root, enclosing more securely any deposit that may have been left. Of as much importance, however, is any necrosed or infected bone which the involucrum may enclose, for it is likely to increase in extent and, as stated, many times involves the deeper portions of the maxilla, often reaching the antrum (Fig. 9).

If I have suggested anything new or valuable, I believe it is the necessity of either curetting or burring about all teeth where the disease is found, and of more thorough removal, if the disease is deep seated—that is, of consciously assisting Nature to do what she is always trying to do. These deeper-seated sequestra, however, do not always prevent the involucrum from closing tightly about the neck and roots of the teeth, especially if the involucrum is composed of bone tissue. In such a case, at some point about the tooth, dead bone may be found or a place which can be penetrated to dead bone or to a cavity above. This, however, can be done only with a delicate but sufficiently stiff probe such as I will show. A small portion of necrosed bone may be absorbed and complete regeneration finally take place after Nature has been stimulated to a new effort, but the approved surgical treatment is to remove all dead or dying bone if it be practicable.

It must be borne in mind that the process of regeneration of bone in these cases is accompanied by acute inflammation of the surrounding tissue. The new-forming bone is soft and yielding; the callus does not show much tendency to harden for three or four weeks, and does not become ossified for six or more weeks. Often, therefore, after the removal of bone about the roots, the teeth are looser than ever, and at times need splinting with wires to other and firmer teeth, the splint remaining until ossification is completed, when the teeth

will become firm and useful, provided there remained in the beginning enough live bone, periosteum, and endosteum for the purposes of regeneration.

CONCLUSION.

In conclusion, I apologize for the length of this paper. To me, however, every portion of the subject is fraught with so much interest and clinical experience that it has been difficult to select that which seemed most necessary in presenting the subject.

The radiographs will somewhat support my practical experience, but only your own experience, past and future, can reveal to you the great prevalence and ravages of this disease.

11 East Seventh Street.

ABSTRACT OF DISCUSSION.

DR. EUGENE S. TALBOT, Chicago: Dr. Fletcher says that a large percentage of diseases of the alveolar process are of local origin. Here I disagree with him. He says, however, that "to have good teeth and healthy gums is one of the first requisites of perfect health." No one will dispute this statement. Perfect health, however, means health of the body, generally, as well as the mouth. Dr. Fletcher says that "the term interstitial gingivitis is subject to criticism since it implies inflammation of the soft tissues as being the primary tissues involved." The constitutional changes which cause this disease nearly always take place in the arteries, as demonstrated in my work on "Interstitial Gingivitis or So-called Pyorrhea Alveolaris," and, therefore, the bone is liable to be the first involved. The term "interstitial gingivitis" was given for the very reason that the disease was deep-seated; the word "interstitial" means between tissues including both hard and soft. From Dr. Fletcher's reasoning the word "alveolitis" is objectionable since it does not refer to the gums and soft parts which are always first involved when the disease is of local origin, as he asserts it is, in a large percentage of cases. The term "pyorrhea alveolaris" should be used only when pus is present. Dr. Fletcher ignores the autointoxications of pregnancy and those caused by drugs and diseases. Certainly arteriosclerosis and endarteritis obliterans, which are present in almost every case, are not local irritations. He says that a low state of health could hardly be the cause of an infectious disease. Researches have shown that the only infection which takes place in this disease is pus infection. The inflammatory process precedes this stage. Dr. Fletcher describes the effects of syphilis, tuberculosis and actinomycosis as infections and classes all pathologic processes as infection. These diseases may or may not cause infection of and destruction of bone, etc. Very few patients come to me for treatment suffering from these infections. Dr. Fletcher speaks about necrosis and necrotic tissue; asserts that tartar is the great cause; that "infection of the alveolar process is almost unlimited;" that "calcareous deposit is found in the mouth of every adult human and of most children." If it be due to tartar, how is the disease accounted for in animals which do not have tartar but which do have deposits, the result of the disease? My studies on animals and human beings have demonstrated that this disease (in the constitutional and large majority of cases) is the result of irritation in the blood, which sets up absorption of bone (not pathologic in the sense of necrotic), but precisely such absorption as results in the alveolar process when a tooth is extracted or in tooth movement. Dr. Fletcher forgets that the alveolar process is wholly unlike any other in the body, being a doubly transitory structure. Its end is annihilation. It is natural for this bone to be absorbed; not so with other bones. The alveolar process is only waiting for some slight irritation (not sufficiently active to cause necrosis) to set up absorption. This irritation is caused by changes in the blood stream (autointoxication and acidosis). Syphilis, tuberculosis, actinomycosis and all diseases will cause such changes in the blood, and always act on the alveolar process. Dr. Fletcher brings forth no researches in proof of the correctness of his premises. I still believe that there are local causes, but a large proportion are constitutional. It is my experience that regeneration of the alveolar process, if it does take place, is a process similar to that of bone absorption. If acute inflammation sets in the formation of osteoclasts and osteoblasts, halisteresis, and Volkmann's perforating canal absorption can not take place.

DR. G. V. I. BROWN, Milwaukee: When Dr. Fletcher uses the termination "itis," without modification, then he lays himself open to the necessity of accepting the well-known etiologic factors that come into play with reference to all inflammations. He would lead us to infer that he believes the questions of constitutional characters are very slight; but again he tells us that he does consider them important when he says that the cause is entirely local. His paper speaks of "autointoxication, or greater susceptibility to disease." The latter is not autointoxication, but may be a result of it. Do you believe for a moment that by any kind of scraping you could prevent the dark line appearing at the gingival border, or the effect on the structures of excessive mercury administration? Would scurvy do the same thing? I have shown several times a series of slides of an individual who had what under Dr. Fletcher's term would be alveolitis; of course he had alveolitis, but every organ in the man's body—heart, kidneys, liver, spleen—showed the same round-celled infiltration, the same destructive process going on as in the alveolar process, but worse in the alveolar process than elsewhere, because he had alveolitis the result of leukemia, which is a constitutional disease. I thought that everybody was willing to admit that where inflammation, especially of such a character as this exists, there are both predisposing and exciting etiologic factors. Dr. Fletcher gets good results from his treatment, and I am perfectly willing to accept his surgical principles and methods of treatment, because I know he knows what he is talking about. There is no difference between us except in the matter of trying to make it appear that this one factor, calcic deposits, so greatly overshadows the constitutional and all other generally recognized factors.

DR. STEWART L. MCCURDY, Pittsburg: The terms "caries" and "necrosis" denote incidents in the history of disease, and not diseases themselves, if we take into consideration the etiologic factors that produce disease. Caries of any tissue, hard or soft, is the result of some local or constitutional disease. Necrosis, likewise, implies a history of constitutional disease. We must go back to the etiologic factors that produce the disease rather than consider these as distinct diseases. From Keen's new work on surgery I find that primarily considered tuberculosis of the alveolar process is rather rare compared to syphilis and other diseases of this structure. I would like to apply the word "hereditary" rather than "congenital" to these diseases. Syphilis is rarely congenital. The syphilitic condition exists at the time of birth, but not the disease itself. "Congenital" means existing at birth, and "hereditary" means that the disease develops at any time in after-life, but that it was latent at the time of birth. The majority of these conditions develop later. I made the estimate in 1897 that 50 per cent. of all bone and joint diseases of children had syphilitic ancestry and this view was so radical at that time that the paper was not published; yet since that time many more radical papers than mine have been published. Most practitioners of medicine and surgery had not seen as many of those general syphilitic diseases as those of us who practice among railroaders, mill-workers and the laboring classes. Men who are in sky-scrapers do not see the cases that men see who are treating this class of cases.

DR. VIDA A. LATHAM, Chicago: The whole of this discussion goes back to the first principles. What is pyorrhea alveolaris, Riggs' disease, or interstitial gingivitis? Let us have a pathologic classification; in the lack of it lies our trouble! Dr. Fletcher is misunderstood by some people, Dr. Talbot by others, and I think that Riggs himself was misconstrued. The condition termed alveolitis exists as a later period. The disease starts with a gingivitis, and I believe that Dr. Fletcher's statement is true that thrombosis plays a part; that it is a primary factor; in other words, the vasomotor system losing control and being soon affected by thrombosis and the degeneration of

the nerve fibers of the gingivæ, prevents contraction in some cases and gives advanced retraction in others, and thence result two forms of pyorrhea, if I may use that term: 1, the acute, with the spongy gum, bleeding, pus formation, with chronic suppurative alveolitis as the termination or sequela; 2, the chronic, in which there is typical fibrosis, recessional gum, with that peculiar black stain running around the teeth—few know what it is—which produces a mechanical abrasion that gradually causes the tooth structure to become less and less and the alveolar process may be denuded of the periosteum, and on top of that we get recession of the gum which finally exposes the cementum of the tooth. This form of gingivitis is seldom or never mentioned as a pyorrheal condition. I believe it is pyorrheal myself. Another reason why I think that this classification is going to be borne out is this: In both cases, whether of the pus-forming type or the fibrosis variety, there is eversion of the teeth. In some cases of fibrosis the teeth are turned right out, so that they have to be extracted instead of being replaced. I think that the fibrous form of alveolitis goes more particularly with Dr. Talbot's theory; when there is faulty elimination or metabolism accompanied by liver disease, very often cholangitis is present, and anemic areas in the stomach, and the pancreas is at fault. In these cases there is a change in the tooth structure showing that there is arteriosclerosis behind it.

DR. DANIEL HOPKINSON, Milwaukee: I have frequently tried to isolate some organism as an etiologic factor in this condition, but have met with negative results. But I think that possibly another way of isolating organisms, as the tubercle bacilli, is by the inoculation of the guinea-pig. If we question whether a certain lesion is tuberculous or not, by inoculating a guinea-pig, say in the groin, we can positively state whether the tubercle bacilli are present; even if in few numbers they will positively develop in the guinea-pig. So far as the histologic changes in tuberculosis or syphilis of these structures are concerned, they are frequently identical. If, however, the *Spirochæta pallida* be found, and we are positive that it is the pallida and not any other spirochete, then we can state positively that we are dealing with a syphilitic lesion. But unless an individual has frequently found these *Spirochætæ pallidæ* and has been able to differentiate them from the other spirochetes present, such a diagnosis would not be reliable. Pus-producing organisms might possibly be isolated by another inoculation.

I think that the tubercle bacilli are very rarely, if ever, obtained in sputum in a pure type. Especially in the mouth we find almost every form of suppurative organism; therefore, if we are dealing with a tuberculous lesion, there is undoubtedly present a secondary infection with pus-producing organisms.

DR. M. L. RHEIN, New York: I believe that the apparent variance of opinions on this subject is due entirely to the fact that we have never had a proper classification or nomenclature of pathogenic conditions involving what may be termed the peridental aspects. The exciting cause ought to be recognized in the nomenclature and associated with it the predisposing cause. A good example for such a nomenclature is that adopted by the dermatologists. We have been discussing here a large variety of diseases and attempting to include them under one particular head. I thoroughly believe that a large number of diseases can be properly termed "alveolitis," with an adjective expressing the predisposing cause, just as well as I am assured that a large number could be as appropriately termed "gingivitis," with its proper predisposing cause expressed by an adjective. I am sure that the class of cases in which faulty metabolism is a predisposing cause is an entirely different class. Those are the cases in which the tooth has a tendency to become everted or protrude. The result of my investigations on that particular type of disease is that it is due to the abnormal condition of the blood which is circulating in the pulp of the tooth and acting as an exciting cause. Faulty metabolism of some kind produces an irritation that makes itself felt in the end circulation that we have in the pulp of the tooth. I have given considerable attention to the microscopic examination of pulps of this nature, and I have found in such cases the most remarkable pathologic conditions in the pulps of teeth that have never even been abraded on their exterior surfaces. The removal of such pulps has been sufficient to produce a cure of such conditions. Dr. Fletcher and Dr. Talbot are discussing different diseases. Nothing can better demonstrate the absolute necessity for this Section to produce a proper classification of the different diseases of the alveolar or, what may be a better term, peridental, regions of the mouth.

DR. EDWARD C. BRIGGS, Boston: That interstitial gingivitis is an entirely separate thing from infectious alveolitis seems to me perfectly clear. There is no question that infection often supervenes in interstitial gingivitis and brings about the true infectious alveolitis which Dr. Fletcher describes. But that it exists as a first condition in all cases I could not concede. Interstitial gingivitis, as I understand it, exists where there are no deposits, and that is one thing that is often overlooked in the treatment—that many cases of true interstitial gingivitis show very little evidence either in the way of pus or of deposits. These cases of infection we see and may confuse them at first with cases of interstitial gingivitis. I have seen two cases of actinomycosis which at first I thought were severe cases of interstitial gingivitis. I proved them to be cases of actinomycosis, and subsequent surgical treatment cured the condition.

Destruction of the alveolar process is not necessarily always caused by inflammation, but is the physiologic condition due to any irritation that is set up about the alveolar process, as after extraction. So we get it in the irritation that comes in gingivitis. The first treatment of these cases of interstitial gingivitis is the removal of the pulp, which is the beginning of the treatment in a great many cases, to offset the pathologic changes.

DR. M. H. FLETCHER, Cincinnati: I agree with Dr. Rhein that the nomenclature is still unsatisfactory. I have plainly stated in the paper that the soft tissues are first involved and that the bone becomes involved subsequently. The word "gingivitis" indicates the earlier stages of the disease, in which the part would recover with the simplest treatment did not the bone become the foundation or primary factor in the chronic stages. At the present I believe that the use of "alveolitis" as a generic term allows of the best description of the diseases of the soft tissues by the use of qualifying terms, as described in the paper. The name, however, is insignificant compared with the pathology and etiology. Both Drs. Talbot and Brown ignore this and other parts of the paper in their discussion. Arteriosclerosis is given great prominence in Dr. Talbot's book as well as in his discussion. The terms "arteriosclerosis" and "endarteritis obliterans" are practically synonymous, the latter term being a description of the closure of the arteries in arteriosclerosis. This disease of the arteries and the high pressure that accompanies constitute practically a disease of the large vessels, not usually found in the capillaries, and yet the capillaries, smaller arterioles, and Haversian canals are the only blood vessels found in the tissues about the teeth. Faulty metabolism, from any cause, fosters and augments any existing weakness or lesion, and this was set forth in Dr. Briggs' paper as in my own. Dr. Talbot says that I "ignore the autointoxications of pregnancy, drugs and disease" as a special cause of the disease. I do not believe, as he does, that this is a special factor here any more than it would be in any portion of the body where a point of least resistance is found. If Dr. Talbot will read the paper more carefully he could hardly make the remark that I class "all pathologic processes as infection," and I refer him and Dr. Brown to the paper itself for answers to most of their objections and to a more full discussion found in reprints of the paper and discussion. Dr. Talbot further says: "Dr. Fletcher forgets that here is a condition wholly unlike any other part of the body, the alveolar process being a doubly transitory structure. Its end is annihilation. It is natural for this bone to be absorbed; not so with other bones." I can not see any foundation for this statement. If by "doubly transitory structure" he means that the alveolar process is gradually becoming obsolescent and thereby is deficient in quality of structure or lacking in resisting power, I differ with him most emphatically. According to the laws of evolution, if an organ is becoming obsolescent

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from disuse it gradually grows smaller, and may grow weaker as far as muscles are concerned, but it always receives the requisite amount of blood and is perfectly nourished, but each generation finds it smaller. Under natural selection many hundreds of generations are required to make an appreciable change in a genus or a species. I believe that the written history of man is not long enough to make evident much change in him. According to the laws of evolution the teeth would disappear before the alveolar process. The teeth stimulate its growth; when they are extracted the process disappears. If, however, new teeth were present in the jaw and were to erupt, the alveolar process would be rebuilt as in the second or third dentitions. In rodents, elephants and all animals that have teeth of continuous growth, the alveolar process is also continuously renewed, showing that in vertebrate types the alveolar process is anything but a weak or transitory structure. The tail of the tadpole might be called transitory, but up to the time when it begins to disappear it is well supplied with circulation and nourishment and is perfectly strong for its function.

[Limitations of space in THE JOURNAL necessitate abbreviation of the discussion here, but copies of the paper and full discussion can be obtained by sending to Dr. Fletcher.]

CIRCULATORY DISTURBANCES IN DIPHTHERIA.*

JOHN HOWLAND, M.D.
NEW YORK.

Matthew Arnold, in his "Essays on Criticism," says: "It is true that all time given to writing critiques on the works of others would be much better employed if it were given to original composition."

From the truth of this statement we must occasionally except the subject of medicine, for it is not the work of one man that is analyzed, but the opinions and hypotheses of many. These often give us information of great value in regard to matters which are insusceptible of direct experimental investigation, and from such an analysis we may often see the gaps in our knowledge that require to be filled.

It is not possible within reasonable limits to give a systematic discussion of the whole subject of the circulatory disturbances in diphtheria, but I wish rather to consider the underlying causes of these disturbances, some aspects of the symptoms, and the rational therapy indicated to oppose or counteract these underlying causes.

A thorough knowledge of the cardiac lesions which result from diphtheria is requisite for a consideration of the production of symptoms, and this has been afforded by the careful and extensive studies of Hayem, Birch-Hirshfeld, Leyden, Unruh, Steffen, Ribbert, Romberg, Councilman, Mallory and Pearce and many others. Though they differ in regard to certain unessential details, their agreement is general and striking. Moreover, Aschoff and Tawara, who on the basis of a critical study opposed many of the views in regard to the heart muscle in other diseases, state that the changes in diphtheria are extensive and severe. Thrombosis, endocarditis and pericarditis play only an occasional rôle. The two chief lesions are the parenchymatous and interstitial.

Fatty degeneration is extremely frequent. It varies in degree from an extremely mild to a marked change and it constantly accompanies the severer lesions. This degeneration may occur in the first few days, but it is also found late in the disease. A much more severe degeneration which affects all parts of the muscle fiber, the contractile elements, the protoplasm and the nucleus, and which leads to the formation of granular detritus and large irregular hyaline masses, is also found. This is both focal and general and is at times so extensive that it was estimated by Councilman that in one of his cases one-third of the heart was destroyed. This extreme degeneration is only found late in the course of the disease, rarely earlier than the seventh day.

The interstitial changes are of two types. In the one type there are focal collections of lymphoid and plasma cells. In the other there is an invasion of the degenerated and necrotic muscle cells with endothelial cells and polymorphonuclear leucocytes. The first of these types is usually accompanied by some degeneration of the myocardium, but it is not dependent on it, while in the second type, during the process of repair, an extensive formation of connective tissue may take place. It should be emphasized that the interstitial changes are essentially late changes. Up to the sixth or seventh day, then, fatty degeneration is practically the only abnormal condition present in the heart.

There has been no satisfactory investigation in regard to the intrinsic nerves and ganglia of the heart. The findings in the pneumogastric nerves will be considered later.

It is usually customary to divide the circulatory symptoms according to the time of their appearance into the early, or those occurring during the period of local lesions, which is usually febrile, and those occurring late or during the period of convalescence, which is almost always afebrile. This is not strictly correct, but is more satisfactory than dividing them according to their mode of production, which would take for granted things that are still sub judice.

EARLY CIRCULATORY DISTURBANCES.

The early circulatory disturbance occurring at the height of the disease is extraordinarily fatal. When fully developed it is practically never recovered from and but a few hours at most separate the beginning of the symptoms and the termination. Before the introduction of antitoxin it was greatly feared, and with reason; now, thanks to antitoxin, it is rarely seen. We meet it most frequently in older children or young adults in whom for several days the throat process has been neglected. The unfortunate patient presents all the evidences of malignant diphtheria. The process in the throat is extensive with membrane covering tonsils, uvula, soft palate, pharynx, sometimes extending into the larynx. The nasopharynx is filled with membrane, making nasal respiration impossible, and the upper lip is excoriated with the bloody purulent discharge which escapes from the nostrils. The cervical glands are greatly swollen so as to fill all the depressions in the neck and make a veritable collar around the throat.

The temperature is sometimes greatly elevated, at others little above normal, but the prostration is extreme and there is marked pallor. The heart's action is usually rapid, but the sounds are for a time of fair quality and the blood pressure is not much below normal. Before long, however, though sometimes after the local process in the throat has begun materially to improve, the pulse becomes weaker, the blood pressure falls rapidly and progressively, the heart's action becomes more and more feeble, and the patient quickly passes into a

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

condition of collapse which is unaffected by cardiac drugs. The heart, however, continues in many cases to beat after respiration has ceased.

The explanation that the death in these cases is a cardiac death failed to satisfy the critical. Naunyn, Harnach, Rosenbach and others objected to it on the clinical grounds that in the majority of instances the heart remains regular, it sounds clear, the pulse palpable until shortly before death, and that the increased frequency can not be looked on as a sign of cardiac weakness because, on the contrary, with extensive cardiac disease, as in the late stages of diphtheria, the heart may be slow.

Criticisms from the pathologic side were also not lacking. In many instances the changes found in the heart itself were entirely insufficient to account for death.

To explain these discrepancies Romberg and Pässler instituted their well-known experiments. These experiments were carried out on rabbits, before and during the stage of collapse, who had previously been injected with a large number of living diphtheria bacilli. Tests were made of the capacity of the heart to work against increased obstruction (compression of the aorta), and of the function of the vasomotor center as shown by its reaction to nasal faradization and asphyxia. Just before collapse the heart was capable but the vasomotor center slow and incomplete in its response. During collapse the vasomotor center failed utterly, while the heart was capable of beating with slightly diminished force if the stimulus of obstruction was provided.

The proof is undoubted and has been accepted save in regard to the condition of the heart. Romberg and Pässler considered this normal. Pässler and Rolly, some years later, continued the experiments, using more exact methods, and decided that while death was due to the paralysis of the vasomotor center, the heart undoubtedly was considerably affected.

There can be no doubt that these results explain satisfactorily the symptoms as we see them in man, and the circulatory phenomena are strikingly similar if due allowance is made for the fact that in man the toxin is slowly absorbed through a period of many hours, and in animals, for technical reasons, it must be given in enormous doses at one injection. The fact that the heart shows impairment even without anatomic change gives some foundation for Hesse's theory of a functional interference with its action, due to the effect of the toxin, even though this has been vigorously denied by many writers on the subject.

Romberg's and Pässler's results have been generally accepted, but, curiously enough, not made use of by those writing on the therapy of this condition. Pässler investigated the effects of drugs on experimental animals. Caffein, camphor and digitalis, in the order named, were of most value, and infusion of salt solution had a favorable effect. But all the improvement was only temporary. This is only to be expected in view of the enormous quantity of toxin that was used.

In man it is interesting to speculate if, with poisoning so severe as to affect the vasomotor center, recovery is ever possible. One may imagine a condition where the balance was so slight on the wrong side that survival for a few hours might turn the scale toward recovery. No matter how unfavorable the outlook, we should use all our efforts, but they should be intelligently directed.

Caffein, camphor and digitalis hypodermatically and frequently repeated for their effect on the center, and adrenalin for its constricting influence on the blood vessels, are indicated. The last is so evanescent that but little can be hoped from it. Its use is, however, theoretically correct. One or two infusions of salt solution may be used. From antitoxin at this late date we can expect nothing. It should have been used long before and in sufficient quantities.

LATE CIRCULATORY DISTURBANCES.

The late circulatory disturbances may appear at any time from the second to the fifth week or even later. It seems unnecessary to adopt Förster's elaborate classification in regard to them, but he has shown that the time of their appearance has an important bearing on the prognosis.

We meet these disturbances usually in older children, and in the majority of instances after severe infections which have been untreated for a considerable length of time, but it is astonishing to see after how mild a local infection trouble with the myocardium may occur. It is only in uncomplicated cases that symptoms may be studied properly. Pneumonia and other complications so disturb the picture that it is at times impossible to recognize the condition.

We may divide the symptoms into those presented by the pulse and heart and directly dependent on the circulation, and those of a more general character. Many of those presented by the heart and pulse are easy to elicit, while others depend more or less on the personal factor of the examining physician, and there is a great discrepancy in opinion regarding them which more or less destroys their statistical value.

The first symptoms are usually found between the ninth and fifteenth day, whereas anatomically the late changes, i. e., necrosis and hyalin degeneration and interstitial infiltration, may be found from the sixth to the ninth day. This, taken with the fact that at autopsy there may be found considerable myocardial change that in spite of the most careful examination has escaped clinical observation, demonstrates that the pathologic changes require several days development before they are sufficiently marked to give recognizable symptoms.

The first symptoms are usually found in the pulse, which drops with the temperature, often to below normal, and may remain there for several days before rising again, or it may rise and fall again and repeat this several times. In a certain percentage of cases it may stay persistently high. Either of these actions means almost certainly myocarditis.

At other times the first symptom is irregularity in force or rhythm of the pulse. Irregularity in force is much more important than that in rhythm, for the latter is frequently encountered in children, while, on the other hand, the pulse may be regular throughout the course of a severe myocarditis. Irregularity in force, however, is constantly present and may remain for months. The pulse, though it may be regular, is very unstable, is affected by the emotions and by exercise to a most pronounced degree and may retain this quality far on into convalescence when all other evidences of disease have disappeared. As before mentioned, the rapidity varies greatly and from it alone not much information can be obtained: the worst prognosis is to be given those cases with a low and constantly falling rate.

An examination of the heart reveals the same abnormalities as does the pulse, but in addition others on which much attention has been focused, and foremost among these are murmurs and evidences of dilatation.

It is with regard to these two that the personal factor of the examining individual plays such an important part, and it is therefore no surprise to find that the interpretation of results by different observers varies widely. It is universally agreed that murmurs are frequently present at this time; they are in the vast majority of cases systolic in time, blowing in character, and though at first heard loudest over the base or body of the heart, eventually are heard with greatest intensity in the vicinity of the apex. It is also universally agreed that endocarditis is very rare. There is a great diversity of opinion in regard to the meaning of these murmurs. Hibbard considered that 10 per cent. of diphtheria patients had evidences of actual regurgitation through the mitral valve, while White and Smith, working in the same hospital some years later, considered that 75 per cent. of their patients leaving the hospital had murmurs thought to be organic and due to mitral insufficiency resulting from changes in the heart muscle. There is almost as great a difference of opinion among other observers. While there is undoubted evidence that murmurs from dilatation occur and occur frequently, it seems to me that the value of these murmurs as an index of mitral insufficiency due to dilatation has been greatly overrated, and that we should look on them with some caution.

Whether or not we accept Sahli's views as to the production of accidental murmurs, we have present in diphtheria those conditions in which they are usually found, that is, dilated blood vessels and an anemia marked and progressive. Hochsinger's assertion that accidental murmurs are unusual in children is true only of the very young, and the circulatory disturbances are usually met with in the older. Then, too, murmurs appear and persist only a few hours or days, and may disappear and even reappear again. This could hardly be true were they due to organic muscular lesions. Mallory's findings in one case of changes limited to the papillary muscles alone suggests the part that they may play. An accentuation of the second pulmonic sound as an evidence of regurgitation should also be regarded with caution as a second pulmonic sound louder than the second aortic is the rule up to adult life, and the accentuation may be only relative on account of the great weakness of the first sound. Finally, so many patients with these auscultatory changes show nothing else abnormal that it is difficult to reconcile the mildness of the clinical course with the assumed severity of the anatomic lesion.

Murmurs are seldom the only symptom, but, on the other hand, there may be a fatal termination and no murmur at any time. For these reasons we can not draw accurate deductions as to the severity of the lesion present from the presence or absence of these murmurs.

In regard to dilatation there is equally a difference of opinion. Unruh thought that the dilatation was usually of the right side of the heart; Schmaltz, Förster and the majority of observers think it occurs chiefly on the left side. Förster, however, says that it is frequent on the right side with croup. Rabot and Philippe believe the diagnosis of this condition to be so difficult, especially in children, as to render the results untrustworthy. It is my personal opinion that dilatation has been diagnosticated too frequently, but it would, nevertheless, be quite incorrect to pretend that it is a rare or unusual condition.

EVIDENCE OF MYOCARDIAL DISEASE.

As an evidence of myocardial disease there is another sign which is of greater value than any of the others on account of its great constancy. This is the alteration in the character of the first sound of the heart. No murmurs or evidences of dilatation may be present even in fatal cases, the pulse may be regular in rate and normal in rapidity, but the first heart sound betrays the difficulty. The alteration consists in the more or less complete disappearance of the muscular element in the first sound, the valvular element remaining, or this also may be diminished and even absent. This makes the first sound short, weak, and, as it is usually described, "valvular" in quality. At times the loss of muscular quality is so marked that only by the length of diastole can we tell which is the first and which is the second sound, and if, as sometimes occurs, the pause between the first and second and the second and the succeeding first sound are of equal length, and the so-called "embryocardia" results, this may be impossible. This is no new observation; it was long ago noticed, and is usually mentioned, but never the emphasis laid on it that it deserves.

The absence of a normal sound or element of a sound is exactly as important as the presence of an abnormal one, though not so apt to attract attention. The change is not always easy of recognition, for which frequent examinations by an experienced person are required. A moment's consideration, however, points toward this as the logical abnormality to be found. The great dependence of the first sound on the muscular contraction for its quality, and the anatomic changes present in and around the muscle fibers in diphtheria, clearly demonstrate why this change in quality takes place. I have been struck with the constancy of this sign and its great persistence, lasting as it does at times for weeks and months, even after murmurs accompanying it have disappeared.

Its value may also be demonstrated by means of a test such as Gräupner's. I have made a few of these, enough to satisfy myself of the truth of this statement. Gräupner's test, as you know, is the testing of the pulse rate and blood pressure before and after a certain amount of physical exercise. The normal or compensated heart reacts to this by a rapid rise in pulse rate, which in the course of a very few minutes returns again to normal and by a more gradual rise in blood pressure which persists for a considerable length of time after the rate is normal. Insufficient hearts react in various ways, such as by a failure in pressure rise or a persistence of increased rate.

It is, of course, necessary to perform this test with great care; therefore, in the case of the boy of 9 years whose chart is here shown, instead of having him perform several thousand foot pounds of work, as is usually done, I only allowed him to run up a few steps, amounting to 783 foot pounds of work. He was a boy who had had a moderately severe diphtheria untreated for five days three weeks before. When I made the first few tests he had a weak, valvular first sound at the apex and a faint systolic murmur. The chart shows his failure to react to this test; his pulse rate rose and sank shortly, but the blood pressure, instead of rising, fell and remained subnormal for eighty-seven minutes. Seventeen days later, when the first sound of his heart was again normal, he reacted, as the chart shows, quite normally. An increased amount of exercise would un-

doubtedly have made the changes still more striking, but I did not consider it safe. It is, therefore, much better to depend on the first sound of the heart as an index of the patient's ability to be allowed to take exercise rather than on the presence and absence of murmurs.

Studies in regard to the blood pressure are incomplete and unsatisfactory. The pressure may remain fairly high though generally somewhat below normal. A pressure below 75 mm. always indicates a serious condition and below 70 mm. a very dangerous one. Patients showing a progressive fall should excite the most concern.

Dyspnea, precordial distress, cyanosis, edema and evidences of passive congestion are rare, except passive congestion of the liver, the presence of which is in striking contrast to the absence of congestion elsewhere. Congestion of the liver causes an increase in hepatic dulness, marked tenderness and sometimes pain in that organ.

The general symptoms are at times very much in evidence. One of the earliest of these is pallor, which is found before there is sufficient anemia to account for its great development. A child whose color one afternoon presents nothing abnormal, on the following day may be blanched with an almost cadaveric pallor. Children also may show pronounced mental symptoms, being either apathetic, somnolent and indifferent, or at times excitable, restless and irritable. Gastrointestinal disturbances, especially vomiting, may be present. The vomiting may occur at any time in the course of the disease, may be persistent, and when severe always excites concern. Schmaltz says that it is not probable that these conditions are always the consequence of circulatory disturbances, and that they not infrequently come on at a time when this explanation hardly seems to be supported by the condition of the heart. Loss of weight is also common even during convalescence, when there is no fever and when patients are ingesting a perfectly satisfactory amount of food. I wish to discuss later these symptoms somewhat more particularly.

CAUSE OF DEATH.

The cause of death has not been worked out experimentally. Hallwachs attempted it ten years ago, following the method of Romberg and Pässler, but did not use toxin and was unable to produce post-infectious circulatory disturbance with characteristic changes in the heart muscle. There are great difficulties in accomplishing this, but there is every reason why it should be done. Clinical evidence, though, is conclusive in regard to myocarditis as the cause. Krehl expresses the general view when he says that the circulatory disturbances in convalescence are undoubtedly due to myocarditis; both processes run parallel, and it is clear from the development and exhibition of symptoms that they are to be referred to an insufficient heart muscle.

Henoch, Strümpell and others have sought to explain certain symptoms on the basis of disturbance with the cardiac ganglia, but, as Romberg says, it does not seem necessary to bring in factors which are so slightly understood when there are sufficient explanations in the muscle itself.

TREATMENT.

As far as treatment is concerned there can be no doubt that rest and general management accomplish much more than drugs. All are agreed as to this. On the subject of the value of the different circulatory stimulants there is far less unanimity of opinion. The number of drugs that have been advised in this condition is proof of their inefficiency, especially when practically all observers agree that digitalis, the most certain of all cardiac stimulants, fails in its effect. This at once raises the interesting question whether, if the cardiac muscle is so extensively diseased as to fail to meet the demands made on it by its normal regulatory apparatus, it is capable of being advantageously stimulated by drugs. Clinical experience seems to indicate that it is not, and if occasionally a clinician speaks favorably of one drug it has always been found ineffective in the hands of others. Krehl frankly states that drugs are unsatisfactory. Certainly we can expect very little permanent effect from their use and permanency of effect is what is required, for the myocardial lesions require days and weeks and not hours for their cure.

PNEUMOGASTRIC PARALYSIS.

I have left until the last, because I wish especially to consider that interesting and extremely fatal type of case, usually ascribed to pneumogastric paralysis. The picture of this condition is well known and justly dreaded. It occurs generally after a severe infection untreated with antitoxin or treated late. After a subsidence of the local symptoms convalescence apparently begins, but in my experience careful observation has never failed to show evidence of circulatory disturbance and myocarditis. This disturbance frequently increases in severity, and with it often appear together the three symptoms on account of which the pneumogastric nerve is accused. These are slow pulse, epigastric pain and vomiting. Within a short time the patient goes into a condition of most profound collapse and often is comatose just before the end. To explain this striking symptom-complex it has been the habit to invoke changes in the pneumogastric nerves, especially as these nerves examined postmortem in a number of fatal cases following such symptoms have shown degenerative lesions.

Now to prove the involvement of the pneumogastric nerve, this nerve must be found degenerated in all such cases and, per contra, undegenerated in practically all others. Huguenin, Leyden and other early observers who examined these nerves pronounced them generally normal, but with the modern technic and care the results have been far different. Thus in a series of nine cases reported by Hibbard, fifteen by Thomas, two by Steensland, twenty-eight by Mallory and fourteen by Thomas and Hibbard, a total of sixty-eight in all, the pneumogastric nerve was found to be degenerated in every single case. These changes were found without regard to the association of symptoms, some had vomiting, some pain and some slow pulse; others had none of these, and in many the diphtheria was very mild, the fatal outcome being referred to a complicating scarlet fever or measles which supervened on the original diphtheria infection. Moreover, in an 11-months-old child dying of pneumonia, definitely not due to diphtheria, who had shown none of these symptoms, Thomas found an extensive degeneration of the nerve.

These findings almost completely dispose of the pneumogastric nerve as a factor in producing the symptoms that have been referred to it, otherwise we should meet this symptom-complex daily. Nor can, in some cases at least, the slow pulse be referred to the vagus. Bradycardia occurs following typhoid and other infectious

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diseases as well as diphtheria, and Dehio found that this bradycardia was unaffected by atropin. Schmaltz made the same observation in diphtheria. Atropin by its effect on the vagus termination prevents its inhibitory effect on the heart, and were the slow pulse due to the vagus, after the use of atropin in sufficient quantity, the rapidity of the heart would be greatly increased. But this has not been found to be the case. Theoretically also we should expect a rapid and not a slow pulse with an extremely degenerated vagus.

It seems to me that we can best consider the vomiting in connection with some of the other symptoms that occur in the period of apparent convalescence. These are the pallor, great prostration, progressive emaciation, stupor and at times convulsions. In regard to them no explanation is usually vouchsafed.

It is known that the toxin of diphtheria is very quickly fastened to the cells of the body; that the combination is at first loose and can be broken up by antitoxin, but that after a few hours the toxin can no longer be dislodged from the cells. Yet its effect is not at once manifest. For instance, nephritis may develop late, myocarditis at times does not appear for weeks, and peripheral neuritis may not be manifest for months. But the toxin is none the less powerful, as its profound effect on almost all the body tissues shows, and prominent among these effects are the great changes in the liver (extreme degeneration and necrosis).

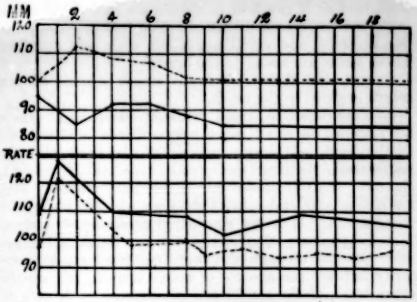
With a knowledge of these facts I have begun a study of the metabolism of diphtheria, which has been singularly neglected. I can find no reference to this work in man, and only two very incomplete studies in animals by De Croly and Noel Paton. De Croly found in rabbits an increased nitrogen excretion which was of short duration, and Paton, who was investigating the effect of fever, found an increase in nitrogenous metabolism in dogs.

I only wish to show at the present time the nitrogenous excretion during two days in the case of a boy 15 years old who had a severe process in the pharynx and who was ill three days before being treated with antitoxin. His throat cleared up rapidly, his temperature fell to normal and his pulse to below normal. He suffered for two weeks from evidences of myocarditis, but thereafter improved rapidly and was discharged cured.

His urine was collected for twenty-four hours, beginning twenty-four hours after his temperature reached normal. This was done so as to eliminate the influence of fever on nitrogenous excretion. The urine was again examined eight days later. On each of these two days he took only a milk diet.

Day.	Nitrogen of food.	Nitrogen of urine.	Urea, N.	NH3 N.	Creatinin N.	Creatin N.	Uric acid N.	Undetermined N.
7	9.0+	24.14	19.19	1.65	0.43	0.33	0.24	2.3
			79.4	*6.9*	*1.8*	*1.3*	*1.0*	*9.5*
15	12.0+	10.66	8.18	0.73	0.30	0.12	0.11	0.62
			81.3	*7.2*	*3.0*	*1.2*	*1.0*	*6.3*

The table shows the excretion of nitrogen (in grams) during the seventh and fifteenth day of illness. The figures in italics are the percentages of total nitrogen. The great excretion of urinary nitrogen on the seventh day is striking. The temperature was normal on both days.



The chart shows the reaction after exercise when the first heart sound was abnormal (solid line) and when, seventeen days later, it was normal (broken line). It will be noticed that when the sound was abnormal the blood pressure fell and remained low, whereas seventeen days later it rose promptly after exercise.

It will be seen by the table that during the first day he ingested a little over 9 gms. of nitrogen and excreted over 24, while eight days later he ingested 13 gms. and excreted only 10. The extraordinary excess of the excreted nitrogen on the first day is at once a striking feature; there is nothing abnormal that can be made out in the proportion of the different nitrogen-containing substances. This great excretion of nitrogen, however, is evidence of some marked influence which in the absence of fever or other disturbing factor we must refer to the latent effect of the toxin. Extensive studies are required on this aspect of the question, but I feel sure that we shall find, especially in fatal cases, and most of all in those with marked liver and kidney changes, evidences of great metabolic disturbance. In this way, it seems to me, the general symptoms and the vomiting can be best explained, referring the slow heart and other circulatory symptoms to the concomitant myocarditis.

STUDIES IN INFANTILE DIGESTION.*

ALFRED FRIEDLANDER, M.D.

CINCINNATI.

The problems of digestion in infancy and early childhood have engaged the attention of pediatricians for a long time, and our literature is filled with discussions as to the digestive activities, possibilities and difficulties in early life. A method of study which approaches the subject from a new view-point should, therefore, have a certain justification. It seemed to me that the bead test, as originally devised by Einhorn, might be a valuable method of direct clinical study. This test was proposed originally for adults, but the feasibility of its use for children struck me. Once engaged on the study of this test, the possibility of its application to very young children, indeed to new-born infants, was apparent, provided that certain difficulties of technic could be overcome. By the procedure about to be described, it was found to be very easy to apply the test to infants of any age. A systematic trial of the test was therefore undertaken to determine its value as a working method in infants and children.

THE BEAD TEST.

Einhorn's method, briefly, is as follows: Small pieces of various food stuffs are fastened to small glass beads

* Read in the Section on Diseases of Children of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

by a silk thread. The beads are strung together by an additional thread and the string of beads, with attached food stuffs, is put into small gelatine capsules. These capsules are swallowed by the patient and the string of beads is then later recovered from the stool. The exact time required for the passage of the beads through the gastrointestinal canal must be noted in each instance. If the beads remain in the tract over fifty hours, the results are not considered reliable, because of the possibility of degeneration as the result of the action of the intestinal bacteria.

Einhorn has recommended the following test substances:

Mutton fat, for fat digestion. Beads are dropped into melted mutton fat, which is then allowed to cool, so that the beads become coated with the fat.

Beef, for proteid digestion. Small strands of raw fresh beef or of raw beef in alcohol are tied to the beads.

Potato, for starch digestion. Potatoes are boiled for two minutes, and small pieces cut with peel attached. These pieces are sewed to the beads.

Catgut, for fibrin digestion. Small strands of raw catgut are tied to the beads.

Nuclear digestion, small pieces of sweetbread. These are enclosed in small gauze bags and the bags are tied to the bead. After the passage of the bead with the sweetbread, the bag is opened, contents, if present, cleaned, smears made on slides and stained with methylene blue and examined to see whether nuclei are still present. It is not considered as absolutely proved that the presence of nuclei in the sweetbread substance after passage through the intestinal tract must necessarily indicate the absence of active trypsin, but, on the other hand, if the nuclei are all digested, it is safe to conclude that active trypsin is present.

AUTHOR'S EXPERIMENTS.

The present series of experiments was conducted on two lines. Older children, able to swallow capsules, were given capsules prepared according to the method of Einhorn, with one modification. This was, that in my series, all of the food stuffs were enclosed in small bags of wide meshed gauze so as to eliminate the possibility of error from the tearing loose of the food stuffs from the bead. It was found to be perfectly feasible to have five small bags containing mutton fat, catgut, potato, beef and sweetbread, each attached to a special colored bead (for purposes of identification), all inserted into a five grain capsule, which the older children had no difficulty in swallowing.

For very young children and infants, the following modification of the method was devised. Naturally, the swallowing of capsules would be out of the question in the case of infants, and several infants in the series to be reported were less than one month of age at the time of experiment. Single beads each with a single food stuff in attached gauze bag were used. By means of a small piece of rubber catheter the introduction of the food stuff into the infant's stomach was comparatively easy. The bead was inserted into the end of the previously sterilized piece of catheter. The catheter was pushed past the constrictors of the pharynx as in the introduction of a stomach tube, and then by means of a stilet passed through the catheter, the bead was pushed out of the catheter and thus into the esophagus. After some little experiment I found that an olive pointed Otis bougie answered very well as a stilet. No difficulty was ever experienced in the introduction of the beads into the esophagus. Indeed, there could be none, as there is no danger of the beads getting into the larynx.

The introduction of the beads was found to be surprisingly easy, even in the case of infants only a week old. Nor did any bad results ever follow the introduction of the beads, though the complete list of experiments on infants and children included over two hundred different administrations. The recovery of the beads from the stools was also very simple, and in a hospital, with careful supervision of the children day and night, the exact time required for passage could also be noted in every case.

The results of the experiments are tabulated in Tables 1-9.

TABLE 1.—CAPSULE SERIES.

No.	Name.	Age. Yrs.	Diagnosis.	Capsule and Result.		Time in hours.
1	Z	5	Chorea and endocarditis.	Mutton fat.	+	
				Potato.	p	
				Catgut.	+	32
				Beef.	+	
				Sweetbread.	+	
2	B.	11	Tb. knee.....	Mutton fat.	+	
				Potato.	p	
				Catgut.	+	20½
				Beef.	p	
				Sweetbread.	+	
3	Zef	6	Hysteroepilepsy.	Mutton fat.	+	
				Potato.	p	
				Catgut.	+	21
				Beef.	p	
				Sweetbread.	+	
4	B., Caps. 2....	11	Tb. knee.....	Mutton fat.	+	
				Potato.	+	
				Catgut.	+	30
				Beef.	+	
				Sweetbread.	+	
5	Z., Caps. 2....	5	Chorea and endocarditis.	Mutton fat.	+	
				Potato.	p	
				Catgut.	—	21½
				Beef.	p	
				Sweetbread.	+	
6	W.	5	Tb. hip.....	Mutton fat.	+	
				Potato.	p	
				Catgut.	—	17
				Beef.	p	
				Sweetbread.	+	
7	Z., Caps. 3....	5	Chorea and endocarditis.	Mutton fat.	+	
				Potato.	+	
				Catgut.	+	26½
				Beef.	p	
				Sweetbread.	+	
8	B., Caps. 3....	11	Tb. knee.....	Mutton fat.	+	
				Potato.	+	
				Catgut.	+	26½
				Beef.	+	
				Sweetbread.	+	
9	L.	3	Bronchopneumonia.	Mutton fat.	+	
				Potato.	+	
				Catgut.	+	52½
				Beef.	+	
				Sweetbread.	+	
10	Balz	11	Enuresis	Mutton fat.	+	
				Potato.	—	
				Catgut.	+	163
				Beef.	+	
				Sweetbread.	+	
11	W., Caps. 2....	5	Tb. hip	Mutton fat.	+	
				Potato.	—	
				Catgut.	+	17½
				Beef.	p	
				Sweetbread.	+	
12	Balz, Caps. 2..	11	Enuresis	Mutton fat.	—	
				Potato.	p	
				Catgut.	—	22½*
				Beef.	+	
				Sweetbread.	+	
13	Zef, Caps. 2...	6	Hysteroepilepsy.	Mutton fat.	+	
				Potato.	p	
				Catgut.	—	17½
				Beef.	—	
				Sweetbread.	+	

* Passed 4 hours after Caps. 1.

TABLE 1.—CAPSULE SERIES—Continued.

No.	Name.	Age. Yrs.	Diagnosis.	Capsule and Result.	Time in hours.
14	W., Caps 3....	5	Tb. hip	Mutton fat. —	
				Potato. +	
				Catgut. —	27½
				Beef. p	
				Sweetbread. +	
15	Balz, Caps 3...	11	Enuresis	Mutton fat. +	
				Potato. p	
				Catgut. +	24
				Beef. +	
				Sweetbread. +	
16	Zef, Caps. 3....	6	Hysteroepilepsy.	Mutton fat. +	
				Potato. —	
				Catgut. —	16½†
				Beef. +	
				Sweetbread. +	
17	L., Caps. 2....	3	Bronchopneumonia.	Mutton fat. +	
				Potato. p	
				Catgut. p	24½
				Beef. p	
				Sweetbread. +	
18	Balz, Caps. 4..	11	Enuresis	Mutton fat. +	
				Potato. +	
				Catgut. +	17½
				Beef. +	
				Sweetbread. +	
19	B., Caps. 4....	11	Tb. knee.....	Mutton fat. +	
				Potato. —	
				Catgut. +	20½
				Beef. +	
				Sweetbread. +	
20	W., Caps. 4....	5	Tb. hip.....	Mutton fat. +	
				Potato. —	
				Catgut. +	21½
				Beef. +	
				Sweetbread. +	
21	B., Caps. 5....	11	Tb. knee.....	Mutton fat. +	
				Potato. —	
				Catgut. +	
				Beef. +	
				Sweetbread. +	18½
22	Balz, Caps. 5..	11	Enuresis	Mutton fat. +	
				Potato. p	
				Catgut. +	20¾
				Beef. +	
				Sweetbread. +	
23	W., Caps. 5....	5	Tb. hip.....	Mutton fat. —	
				Potato. +	
				Catgut. p	25
				Beef. p	
				Sweetbread. +	
24	B., Caps. 6....	11	Tb. knee.....	Mutton fat. +	
				Potato. p	
				Catgut. +	21½
				Beef. p	
				Sweetbread. +	
25	W., Caps 6....	5	Tb. hip.....	Mutton fat. +	
				Potato. —	
				Catgut. +	22½
				Beef. +	
				Sweetbread. +	
26	Balz, Caps. 6..	11	Enuresis	Mutton fat. +	
				Potato. —	
				Catgut. +	26½
				Beef. +	
				Sweetbread. +	
27	L., Caps. 3....	3	Bronchopneumonia.	Mutton fat. +	
				Potato. +	
				Catgut. —	18½
				Beef. +	
				Sweetbread. +	

† Potato 5 minutes from this time on.

Six children ranging in age from 3 to 11 years were employed in carrying on the experiments. Two experiments were excluded because the time limit exceeded (52½ and 163 hours.) In the remaining 25 tests, complete digestion occurred twice, both in the same boy, aged 11. Tb. knee. (Symbols: + = digestion. p. = partial digestion (at least half). — = no digestion.)

Mutton fat: 21 +; 4 —. Potato: 5 min. and 2 min.: 8 +; 10 p; 7 —. Catgut: 17 +; 2 p; 6 —. Raw beef: 14 +; 9 p; 2 —. Sweetbread: 25 +.

Cases in which experiments were repeated in the same child:

Bramowitz, aged 11. Tb. knee. 6 experiments.

Mutton fat	6 +		
Potato	2 +	2 p	2 —
Catgut	6 +		
Beef	4 +	2 p	
Sweetbread	6 +		

Weber, aged 5. Tb. hip. 6 experiments.

Mutton fat	4 +		2 —
Potato	2 +	1 p	3 —
Catgut	3 +	1 p	2 —
Beef	2 +	4 p	
Sweetbread	6 +		

Balzer, aged 11. enuresis. 6 experiments.

Mutton fat	4 +		1 —
Potato	1 +	3 p	1 —
Catgut	4 +		1 —
Beef	5 +		
Sweetbread	5 +		

TABLE 3.

Milk Curd.—Milk curdled with essence of pepsin, 2 ounces to 1 pint of milk strained through a gauze bag. Milk curd placed in 50 per cent. alcohol for one-half hour, then in water for twenty-four hours. Pieces of curd then placed in gauze bag; bags tied to beads.

No.	Name and Age.	Diagnosis.	Result.	Time in hrs.
1	B., 13 mos....	Gastroenteritis, chronic.	+	20½
2	E., 12 mos....	Gastroenteritis, otitis.	+	23½
3	M., 11 mos....	Gastroenteritis, chronic.	+	39½
4	F., 15 mos....	Pneum. convales.	+	44½
5	Mart, 14 mos..	Pneum. convales.	+	19
6	G., 5 mos.....	Well in with mother.	+	18
7	B., 13 mos....	Gastroenteritis, chronic.	+	18½
8	B., Exp. 2, 13 mos.....	Gastroenteritis, chronic.	+	42
9	S., 10 wks....	Gastroenteritis, acute.	+	27½
10	G., 9 mos.....	Gastroenteritis, chronic.	+	31
11	Y., 11 mos....	Gastroenteritis, chronic.	+	22½
12	K., 5 wks.....	Well in with mother.	+	22

Twelve experiments. All +. Children ranging in age from 5 weeks to 15 months. (+ = digestion. p = partial digestion (at least half). — = no digestion.)

TABLE 4.

Egg White.—Egg boiled 6 minutes. White placed in 50 per cent. alcohol for one hour, then in water. Small pieces in gauze bags; bag tied to bead.

No.	Name and Age.	Diagnosis.	Result.	Time in hrs.
1	B., 13 mos....	Gastroenteritis, chronic.	+	19
2	G., 5 mos.....	Well in with mother.	+	23½
3	B., Exp. 2, 13 mos.....	Gastroenteritis, chronic	+	49
4	C., 3 yrs.....	Mastoid Post. op.	+	48¼
5	S., 10 wks....	Gastroenteritis, acute.	+	18

Five experiments. All +. Children ranging in age from 10 weeks to 3 years. (+ = digestion. p. = partial digestion (at least half). — = no digestion.)

TABLE 5.

Egg Yolk.—Egg boiled 15 minutes. Yolk placed in 50 per cent. alcohol for one hour, then in water. Later in alcohol again. Small pieces in gauze bags. Bag tied to bead.

No.	Name and Age.	Diagnosis.	Result.	Time in hrs.
1	B., 13 mos....	Gastroenteritis, chronic.	+	18½
2	G., 9 mos.....	Gastroenteritis, chronic.	+	43½
3	S., 10 wks....	Gastroenteritis, acute.	+	14½

Three experiments. All +. Children aged 10 weeks, 9 months, 13 months. (+ = digestion. p = partial digestion (at least half). — = no digestion.)

SUMMARY.

CAPSULE SERIES.

In only one child, a boy of 11 (with tubercular knee), was there complete digestion of all the food stuffs, and this complete digestion occurred twice in this child. The sweetbread was digested completely in all cases. The mutton fat was completely digested in 21 out of 25 experiments. The catgut was digested 17 times, the raw beef 14 times and the potato only 8 times. In both the raw beef and potato series partial digestion was noted in a considerable number of the cases where there was no complete digestion.

Placed in the order of their positive results, these capsule experiments showed the following order for the digestibility of the different food stuffs: Sweetbread, mutton fat, catgut, raw beef and potato. It is noteworthy that there was complete digestion of the sweetbread in every case, as evidence of the activity of the trypsin, while the starch digestion was least active. Practically similar results were obtained in the infants with single beads.

The average time required for the passage of the capsule in the 25 experiments was 22½ hours, with 32 and 17 hours as the extremes on either side.

SINGLE BEAD SUMMARIES.

Raw Beef.—Forty-one experiments. In children over 1 year, there were 25 experiments; 14 showed complete digestion; 5 showed partial digestion. In children under 1 year there were 13 experiments, with 5 complete and 2 partial digestions. In 2 children, each aged 5 months, there was complete digestion.

Milk Curd.—Twelve experiments in children varying in age from 5 weeks to 12 months, complete digestion in every case.

TABLE 2.

Raw Beef.—In first experiments a single strand was tied to the bead. In most of the experiments a small mass of raw scraped beef was placed in a wide meshed gauze bag and tied to the bead.

No.	Name.	Age.	Diagnosis.	Result.	Time in hrs.	
1	Y.	4 yrs.	Bronchopneumonia	+	24	
2	W.	11 yrs.	Aortic insufficiency	+	28	
3	G.	5 mos.	Well in with mother	+	24	
4	Y., Exp. 2.	4 yrs.	Bronchopneumonia	+	35½	
5	K.	5 mos.	Gastroenteritis, chronic.	+	11½	
6	Y.	5 mos.	Pneu.; malnutrition	+	23½	
7	W., Exp. 2.	11 yrs.	Aortic insufficiency	+	24	Meat in narrow meshed bag.
8	Y., Exp. 3.	4 yrs.	Bronchopneumonia	+	24	Meat in narrow meshed bag.
9	K.	13 yrs.	Typhoid convalescence.	+	23	Meat in narrow meshed bag.
10	Y., Exp. 4.	4 yrs.	Bronchopneumonia	+	32	Meat in narrow meshed bag.
11	W., Exp. 3.	11 yrs.	Aortic insufficiency	p	9	Meat in narrow meshed bag.
12	K., Exp. 2.	13 yrs.	Typhoid convalescence.	+	19	Meat in narrow meshed bag.
13	W., Exp. 4.	11 yrs.	Aortic insufficiency	+	23½	Strand of beef. Given at same time as (14) which was in bag. Beads passed together.
14	W., Exp. 5.	11 yrs.	Aortic insufficiency	+	23½	Strand of beef. Given at same time as (13) which was in bag. Beads passed together.
15	K., Exp. 3.	13 yrs.	Typhoid convalescence.	+	27	These beads were given together. Strand of beef and beef in bag passed at different times; digestion + in both.
16	K., Exp. 4.	13 yrs.	Typhoid convalescence.	+	21	
17	E.	12 mos.	Gastroenteritis, otitis	+	22	
18	Mey	11 mos.	Gastroenteritis, chronic.	+	31	
19	B.	13 mos.	Gastroenteritis, chronic.	+	187½	This bead retained 24 hrs longer than one given 6 days later.
20	Mart	14 mos.	Pneu. convalescence	+	18	
21	Y.	12 mos.	Gastroenteritis, chronic.	—	19	
22	Y., Exp. 2.	12 mos.	Gastroenteritis, chronic.	p	194½	Bead retained much longer than one given 4 days later. Was passed with bead given 6 days later
23	Mey, Exp. 2.	11 mos.	Gastroenteritis, chronic.	—	14	
24	Mart, Exp. 2.	14 mos.	Pneu. convalescence	+	32½	
25	Mey, Exp. 3.	11 mos.	Gastroenteritis, chronic.	p	22	
26	B., Exp. 2.	13 mos.	Gastroenteritis, chronic.	—	11½	
27	E., Exp. 2.	12 mos.	Gastroenteritis, otitis	+	187½	
28	Mart, Exp. 3.	14 mos.	Pneu. convalescence	p	18¾	
29	Mey, Exp. 4.	11 mos.	Gastroenteritis, chronic.	+	26½	
30	Y., Exp. 3.	12 mos.	Gastroenteritis, chronic.	p	14	
31	B., Exp. 3.	13 mos.	Gastroenteritis, chronic.	—	19	
32	Fels	15 mos.	Pneu. convalescence	+	14½	
33	Mart, Exp. 4.	14 mos.	Pneu. convalescence	p	32½	
34	Y., Exp. 4.	12 mos.	Gastroenteritis, chronic.	p	47	
35	G.	5 mos.	Well in with mother	—	18	
36	Gelg.	9 mos.	Gastroenteritis, chronic.	p	18	
37	Sigm.	10 wks.	Gastroenteritis, acute	—	19½	
38	Sigm., Exp. 2.	10 wks.	Gastroenteritis, acute	—	19½	
39	Grov.	4 wks.	Well in with mother	—	20	
40	Berk	5 mos.	Well in with mother	+	30¾	
41	Kell.	5 wks.	Well in with mother	—	28	

+ = digestion. P = partial digestion (at least half). — = no digestion. Three cases in which bead was retained over 50 hours excluded.

One year or over.	Less than one year.
+ 14	+ 5
p 5	p 2
— 6	— 6

In two cases, each aged 5 months, digestion was complete.

Cases in which experiment was repeated in same child:
(V), 4 years, bronchopneumonia, + — +.
(Y), 12 months, gastroenteritis, chronic (malnutrition), — p p.
(W), 11 years, aortic insufficiency, + — p + +.
(K), 13 years, typhoid convalescence, — + + +.
(Mey), 11 months, gastroenteritis, chronic, + — p +.
(Mart), 14 months, pneumonia convalescence, + + p p.
(B), 13 months, gastroenteritis, chronic, — —.
(Y), 12 months, gastroenteritis, chronic (malnutrition)), — p p.
(Sigm), 10 weeks, well in with mother, — —.

TABLE 6.

Catgut.—Pieces of No. 2 catgut, about 1 or 1½ inches long. Either tied directly to bead or placed in gauze bags, which were tied to the beads.

No.	Name.	Age.	Diagnosis.	Result.	Time in hrs.	Remarks.
1	R.	12 yrs.	Chorea	+	46	Tied to bead.
2	Y.	12 mos.	Gastroenteritis, chronic.	+	32	Tied to bead.
3	M.	11 mos.	Gastroenteritis, chronic.	+	22½	Tied to bead.
4	E.	12 mos.	Gastroenteritis, otitis	+	22½	Tied to bead.
5	B.	13 mos.	Gastroenteritis, chronic.	+	32½	Tied to bead.
6	Y., Exp. 2.	12 mos.	Gastroenteritis, chronic.	+	20	Tied to bead.
7	E., Exp. 2.	12 mos.	Gastroenteritis, otitis	+	33	Tied to bead.
8	M., Exp. 2.	11 mos.	Gastroenteritis, chronic.	+	27	Tied to bead.
9	M., Exp. 3.	11 mos.	Gastroenteritis, chronic.	+	38	Tied to bead.
10	Mart.	14 mos.	Pneum. convalescence	+	27	Tied to bead.
11	M., Exp. 4.	11 mos.	Gastroenteritis, chronic.	+	17½	Tied to bead.
12	B., Exp. 2.	13 mos.	Gastroenteritis, chronic.	+	19½	Tied to bead.
13	E., Exp. 3.	12 mos.	Gastroenteritis, otitis	+	20¾	Tied to bead.
14	Y., Exp. 3.	12 mos.	Gastroenteritis, chronic.	+	62½	Tied to bead.
15	B., Exp. 3.	13 mos.	Gastroenteritis, chronic.	+	20	Tied to bead.
16	Y., Exp. 4.	12 mos.	Gastroenteritis, chronic.	+	20	Tied to bead.
17	M., Exp. 5.	11 mos.	Gastroenteritis, chronic.	—	44	Tied to bead.
18	F.	15 mos.	Pneum. convalescence	+	53	Tied to bead.
19	G.	5 mos.	Well in with mother	+	19½	Tied to bead.
20	Mart, Exp. 2.	14 mos.	Pneum. convalescence	+	19	3 pieces tied in bag.
21	B., Exp. 4.	13 mos.	Gastroenteritis, chronic.	+	42	3 pieces tied in bag.
22	Y., Exp. 5.	12 mos.	Gastroenteritis, chronic.	+	22½	3 pieces tied in bag.
23	G., Exp. 2.	5 mos.	Well in with mother	+	18	3 pieces tied in bag.
24	B., Exp. 5.	13 mos.	Gastroenteritis, chronic.	—	18½	Catgut tied to bead.
25	B., Exp. 6.	13 mos.	Gastroenteritis, chronic.	+	18½	
26	S.	10 wks.	Gastroenteritis, acute	+	19½	
27	G.	4 wks.	Well in with mother	—	20	
28	B.	5 mos.	Well in with mother	+	30¾	
29	K.	5 wks.	Well in with mother	+	28	
30	K., Exp. 2.	5 wks.	Well in with mother	+	22	

Thirty experiments. Children ranging from 5 months to 12 years. + 27. — 3. One — case, healthy baby of 4 weeks. Other 2 cases occurred in children who at different times did digest catgut, viz.: M., 11 months, gastroenteritis, chronic, + + + + —. B., 13 months, gastroenteritis, chronic, + + + + — +. K., healthy baby of 5 weeks, digested + twice. (+ = digestion. p = partial digestion (at least half.) — = no digestion.)

Egg White.—Five experiments. Children ranging in age from 10 weeks to 3 years, complete digestion in every case.

Egg Yolk.—Three experiments. Children aged respectively 10 weeks, 9 months, 13 months, complete digestion in every case.

Catgut.—Thirty experiments. Children ranging in age from 5 months to 12 years; 27 showed complete digestion; 3 no digestion. Two of the negative cases occurred in children who at different times did digest catgut. It is noteworthy that catgut was digested completely on two occasions by a child of 5 weeks.

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TABLE 7.

Sweetbread.—Small pieces of fresh raw sweetbread placed in gauze bags. Bag tied to the bead.

No.	Name.	Age.	Diagnosis.	Result.	Time in hrs.	Remarks.
1	R.	12 yrs.	Chorea	+	24⅝	
2	B.	5 yrs.	Pneum. convalescence..	+	33⅛	
3	Y.	12 mos.	Gastroenteritis, chronic.	p	15	
4	Y., Exp. 2	12 mos.	Gastroenteritis, chronic.	+	23	
5	M.	11 mos.	Gastroenteritis, chronic.	+	20	
6	B.	13 mos.	Gastroenteritis, chronic.	+	19⅝	
7	Mart	14 mos.	Pneum. convalescence..	+	19⅛	
8	G.	5 mos.	Well in with mother...	+	18½	
9	Geig.	9 mos.	Gastroenteritis, chronic.	+	22½	
10	L.	12 mos.	Acute bronchitis.....	—	8½	Very rapid passage.
11	B., Exp. 2	13 mos.	Gastroenteritis, chronic.	+	18⅝	
12	B., Exp. 3	13 mos.	Gastroenteritis, chronic.	+	25½	
13	S.	10 wks.	Gastroenteritis, acute..	+	18	
14	S., Exp. 2	10 wks.	Gastroenteritis, acute..	p	5¼	See special Sweet Bread Table.
15	S., Exp. 3	10 wks.	Gastroenteritis, acute..	—	5	See special Sweet Bread Table.
16	Geig. Exp. 2	9 mos.	Gastroenteritis, chronic.	+	20	
17	S., Exp. 4	10 wks.	Gastroenteritis, acute..	+	9⅝	
18	Geig. Exp. 3	9 mos.	Gastroenteritis, chronic.	+	13	
19	S., Exp. 5	10 wks.	Gastroenteritis, acute..	+	16	
20	G.	4 wks.	Well in with mother...	p	15	See special Sweet Bread Table.
21	Z.	7½ mos.	Gastroenteritis, chronic.	p	19	
22	Z., Exp. 2	7½ mos.	Gastroenteritis, chronic.	+	18	
23	G.	4 wks.	Well in with mother...	+	20	
24	R.	5 mos.	Well in with mother...	+	19½	
25	R.	8 dys.	Well in with mother...	+	10½	
26	K.	5 wks.	Well in with mother...	+	12½	
27	C.	23 dys.	Well in with mother...	p	14½	See special Sweet Bread Table.
28	C., Exp. 2	26 dys.	Well in with mother...	p	22	See special Sweet Bread Table.

Twenty-eight experiments. Children ranging in age from 12 years to 8 days. +20; p 6; —2. (See special sweetbread table and summary.) (+ = digestion. p = partial digestion (at least half). — = no digestion.)

TABLE 8.

Sweetbread (Special Table).—Cases under 6 months of age, including several under 2 months.

No.	Name.	Age.	Diagnosis.	Result.	Time in hrs.	Remarks.
1	G.	5 mos.	Well in with mother...	+	18⅛	
2	S.	10 wks.	Gastroenteritis, acute..	+	18	
3	S., Exp. 2	10 wks.	Gastroenteritis, acute..	p	5½	Sweetbread substance not completely digested. Microscopically, no nuclei to be found.
4	S., Exp. 3	10 wks.	Gastroenteritis, acute..	—	5	Sweetbread substance not digested. No nuclei.
5	S., Exp. 4	10 wks.	Gastroenteritis, acute..	+	9⅝	Complete digestion.
6	S., Exp. 5	10 wks.	Gastroenteritis, acute..	+	16	Complete digestion.
7	G.	4 wks.	Well in with mother...	p	15	Sweetbread substance not completely digested. No nuclei.
8	G., Exp. 2	4 wks.	Well in with mother...	+	20	Complete digestion; raw beef and catgut given next day not digested.
9	B.	5 mos.	Well in with mother...	+	19½	Complete digestion.
10	R.	8 dys.	Well in with mother...	+	10½	Complete digestion.
11	K.	5 wks.	Well in with mother...	+	12½	Complete digestion.
12	C.	23 dys.	Well in with mother...	p	14½	Sweetbread substance not completely digested. No nuclei.
13	C., Exp. 2	26 dys.	Well in with mother...	p	22	Sweetbread substance not completely digested. No nuclei.

(+ = digestion. p = partial digestion (at least half). — = no digestion.)

TABLE 9.

Potato.—Boiled either 2 minutes, 5 minutes or 10 minutes. In cases where digestion was considered complete, only the peel was left. Potato either tied directly to bead or placed in gauze bag which was tied to bead.

No.	Name.	Age.	Diagnosis.	Result.	Time in hrs.	Time boiled.
1	G.	5 mos.	Well in with mother...	—	24	2 min.
2	W.	12 yrs.	Enuresis	+	33	2 min.
3	K.	5 mos.	Gastroenteritis, chronic	—	35	2 min.
4	W.	11 yrs.	Aortic insufficiency....	p	26	2 min.
5	R.	12 yrs.	Chorea	+	46	2 min.
6	Y.	12 mos.	Gastroenteritis, chronic	+	32	2 min.
7	M.	11 mos.	Gastroenteritis, chronic	—	22½	2 min.
8	Y.	12 mos.	Gastroenteritis, chronic	—	22½	2 min.
9	B.	13 mos.	Gastroenteritis, chronic	—	32½	2 min.
10	Y. Exp. 2	12 mos.	Gastroenteritis, chronic,	—	20	2 min.
11	K. Exp. 2	12 mos.	Gastroenteritis, chronic	—	33	2 min.
12	M. Exp. 2	11 mos.	Gastroenteritis, chronic	—	37	2 min.
13	M. Exp. 3	11 mos.	Gastroenteritis, chronic	p	38	2 min.
14	Mart	14 mos.	Pneumonia, convales...	p	27	2 min.
15	M. Exp. 4	11 mos.	Gastroenteritis, chronic	—	17½	2 min.
16	B. Exp. 2	13 mos.	Gastroenteritis, chronic	—	19½	2 min.
17	B. Exp. 3	13 mos.	Gastroenteritis, chronic	—	26⅝	2 min.
18	Y. Exp. 3	12 mos.	Gastroenteritis, chronic	—	62½	2 min.
19	B. Exp. 3	13 mos.	Gastroenteritis, chronic	—	20	10 min.
20	M. Exp. 5	11 mos.	Gastroenteritis, chronic	+	44	10 min.
21	L.	15 mos.	Pneumonia, convales...	+	53	10 min.
22	G.	5 mos.	Well in with mother...	p	19½	10 min.
23	B. Exp. 4	13 mos.	Gastroenteritis, chronic	—	18	10 min.
24	B. Exp. 5	13 mos.	Gastroenteritis, otitis.	—	18	10 min.
25	Y. Exp. 4	12 mos.	Gastroenteritis, acute..	p	42½	10 min.
26	B. Exp. 6	13 mos.	Gastroenteritis, Chronic	p	18½	10 min.
27	S.	10 wks.	Gastroenteritis, acute..	—	14½	5 min.

Twenty seven experiments. Children ranging in age from 5 months to 12 years.
+ 5 = 12 years, 12 years, 15 months, 12 months, 11 months.
p 6 = 11 years, 14 months, 13 months, 12 months, 11 months, 5 months.
— 16. Partial digestion in 5 months' healthy baby, potato boiled 10 minutes.
Cases in which experiment was repeated in same child. B., 13 months, gastroenteritis, chronic, — — — — — p (10 min. potato).
M., 11 months, gastroenteritis, chronic, — — p — + (last with 10 min. potato).
Y., 12 months, gastroenteritis, chronic, + — — p.
E., 12 months, gastroenteritis, otitis, — — —. (+ = digestion. p = partial digestion (at least half). — = no digestion.)

Sweetbread.—The sweetbread experiments numbered 28. Twenty showed complete digestion, 6 partial and 2 no digestion. One of the negative cases occurred in a 12 months old baby and the bead passed in 8½ hours, so that the very rapid passage might easily explain the lack of digestion. The other negative case occurred in a child of 10 weeks, who on four other occasions did digest the sweetbread. And even on the occasion when the sweetbread substance was not digested, the nuclei were completely digested. In order to test nuclear digestion,

in other words, to study the activity of trypsin at a very early period of life, a special series of sweetbread experiments was undertaken in children of very young age. In this series there were 13 experiments, the children ranging in age from 5 months to 8 days. In these cases microscopic smears were made after the sweetbread boads had passed. The bags were washed, then opened, smears made of the residue, and the smears stained with methylene blue. In none of the cases were any nuclei to be found, even when there was some sweetbread residue left. Inasmuch as it is now settled that nuclear digestion as such occurs only as the result of pancreatic activity (trypsin) it seems proved that the pancreas must be functionally active from birth. It is of special interest to note that in a child of 8 days, there should have been complete digestion of the sweetbread.

Potato.—The series included 27 experiments. All of the children, except three, were less than 16 months old. There was complete digestion 5 times, partial digestion 6 times, and no digestion in 16 cases. This comparative inability to digest the starches was, of course, to have been expected and was in direct line with the potato experiments in the older children.

This series of experiments was undertaken primarily to test the method, more especially to try the method for infants. Sweeping conclusions are, of course, quite out of place, as the result of what is after all a limited number of observations. It would seem, however, that the method bids fair to be an addition of value as a means of studying digestive processes in infancy and early childhood. It is, at least, possible that by this method some light may be shed on the physiology of the digestive processes in infancy. The results of the experiments with sweetbread, with special reference to nuclear digestion and the proof thereby afforded of pancreatic activity from birth, are certainly suggestive. A profitable field of inquiry may thus be opened. On the other hand, from the clinical standpoint, the test may prove valuable in infancy. In a given case of malassimilation the test may afford an index as to the special form of food stuffs whose digestion is imperfect and a way thus be afforded of determining a rational alimentary therapy for the individual child.

The report here offered is to be considered as a preliminary study merely, and it is hoped that special phases of the many questions of digestion in infancy may, by this method, now be studied in detail.

4 West Seventh Street.

ABSTRACT OF DISCUSSION.

DR. J. P. SEDGWICK, Minneapolis: We know that there is a difference in the digestion of mutton fat and the fat which the infant gets normally, that is, emulsified fat. It has been shown that the digestion of fat in the stomach does not occur on using this very fat which the doctor has used, and it gave us the impression for many years that fat is not digested in the stomach. The later work of Volhard with emulsified fat shows that it can be digested in the stomach. He worked with an emulsified fat of the egg yolk. Dr. Friedlander's own work shows us the difference between the digestive power of the infant on the mutton fat and the emulsified fat of the egg yolk which he found, I believe, digested in practically every case. Therefore, it would seem that in the routine work the yolk fat would be more applicable than the mutton tallow which has been suggested.

DR. A. W. FAIRBANKS, Boston: There has been in some parts of the south a tendency to use potato in the feeding of infants. I think that the results of Dr. Friedlander's experiments should effectually and permanently dispose of any such idea.

DR. ALFRED FRIEDLANDER, Cincinnati: These experiments were not offered as conclusive. I wanted to know whether it would be possible to employ this method in feeding infants. As to the criticism in regard to mutton fat, it is thoroughly justified. I simply explain that these results are not to be considered as proof of anything definite as to digestibility of fat. Special detailed studies concerning fat and starch digestion are now to be taken up, inasmuch as it is proved that the method is applicable to and valuable for the study of infantile digestion.

PHYSIOLOGIC ASSAY OF NITROGLYCERIN TABLETS, DIGITALIN TABLETS AND FLUIDEXTRACT OF ERGOT.*

CHARLES WALLIS EDMUNDS, M.D.
Professor of Materia Medica and Therapeutics in the University of Michigan.
AND
GEORGE B. ROTH, A.B.
ANN ARBOR, MICH.

Last year in the pharmacologic laboratory of the University of Michigan we undertook an examination of various preparations of such drugs as were suitable for physiologic assay. The object of the examination was to ascertain the relative strength of such medicines when prepared by different manufacturers, some of whom assayed their products physiologically while others relied entirely for an active product on their efforts to purchase the best crude drugs on the market.

The examinations naturally began with the heart tonics, digitalis and strophanthus, because of their great importance and also because there exists a good method by which they can be assayed. The results[1] showed that various preparations of the tincture of digitalis varied in strength in the ratio of 1 to 4, that is, some were one-quarter the strength of others, with still others representing all intermediate gradations, while tinctures of strophanthus showed practically the same variations. Recently other drugs have been examined in the laboratory, and those especially taken up were nitroglycerin tablets, digitalin tablets and ergot.

Nitroglycerin tablets were examined both in respect to the relative strengths of different makes and also with regard to the effect of age on them. These were especially selected for examination as there exists at the present time a widespread feeling of distrust regarding the efficiency of these tablets and the length of time that they will retain their medicinal properties. With this object in view we obtained seventeen different preparations of nitroglycerin hypodermic and compressed tablets, representing seven of the leading manufacturing drug houses in the country. These were examined in February and again in May, 1908.

This period of four months we realize is entirely too short to allow any definite conclusions to be drawn as to the effect of age on the preparations, but through the kindness of the individual manufacturers we have been able to obtain from them the date of manufacture of all these specimens showing that some of the tablets were made as long ago as 1901.

The method of examination we adopted was to observe the effect on the blood pressure of a rabbit when the drug was injected into the circulation in very small doses. This method, while perhaps not strictly accurate,

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

1. Edmunds: THE JOURNAL A. M. A., May 25, 1907, p. 1744.

gives a very fair idea as to whether or not the drug is active and its approximate strength. The rabbit is prepared as for any blood-pressure experiment. After complete anesthesia is produced by the administration of paraldehyd a cannula is inserted in the jugular vein to permit of the injection of the drug, and in the carotid artery is another cannula tied which is connected with the ordinary mercury manometer, the connecting system of tubing being filled with sodium sulphate solution to prevent coagulation of the blood.

RELATIVE STRENGTHS OF DIFFERENT MAKES.

By a series of trials we found that minute doses were sufficient to produce a definite fall in blood pressure. We finally adopted 1/4,000 grain and 1/2,000 grain doses, using the one as a check on the other. To obtain these amounts a 1/100 grain tablet of nitroglycerin was dissolved in 40 c.c. of physiologic salt solution; 1 c.c. of this solution with 1 c.c. of salt solution represented 1/4,000 grain of nitroglycerin, while 2 c.c. of the solution contained 1/2,000 grain. In this way the same amount of fluid was injected at each trial and so far as possible the injections were made at the same rate.

Each preparation was assayed on several rabbits until some sort of uniformity was obtained as to the percentage of fall in pressure which it would produce when given in the doses named. These percentages were then averaged and the results are given in the following table, in which the different preparations are arranged according to age as determined by the dates furnished by the makers:

DOSE OF NITROGLYCERIN AND PERCENTAGE FALL IN BLOOD PRESSURE.

	Date of Manufacture.	1/4000 gr.	1/2000 gr.
1.	December, 1901	27 per cent.	32 per cent.
2.	December, 1901	28 per cent.	36 per cent.
3.	——— 1905?	17 per cent.	22 per cent.
4.	——— 1905?	22 per cent.	33 per cent.
5.	October, 1905	20 per cent.	28 per cent.
6.	January, 1906	34 per cent.	45 per cent.
7.	April, 1906	19 per cent.	28 per cent.
8.	September, 1906	31 per cent.	53 per cent.
9.	March, 1907	35 per cent.	42 per cent.
10.	April, 1907	19 per cent.	31 per cent.
11.	April, 1907	19 per cent.	29 per cent.
12.	May, 1907	28 per cent.	40 per cent.
13.	July, 1907	29 per cent.	36 per cent.
14.	August, 1907	23 per cent.	30 per cent.
15.	September, 1907	18 per cent.	27 per cent.
16.	October, 1907	26 per cent.	31 per cent.
17.	November, 1907	29 per cent.	36 per cent.

This table shows that the so-called 1/100 grain tablet when injected in 1/4,000 grain doses lowers the blood pressure on an average about 25 per cent. and in 1/2,000 grain doses about 34 per cent. Some of the preparations, however, show rather wide variations, as, for instance, Nos. 3, 6 and 9, but, on the other hand, with a certain number the results are uniform. This uniformity is well shown in four samples made by one firm. These gave percentages as follows:

No.	1/4000 gr.	1/2000 gr.
5	20 per cent.	28 per cent.
7	19 per cent.	28 per cent.
10	19 per cent.	31 per cent.
14	23 per cent.	30 per cent.

It is true that these are all weaker than the average.

To get some clearer ideas as to what these different percentages indicate in regard to the relative strength further dilutions of the solution to be tested were made, and these in one of the experiments gave the following percentage results:

1/16,000 gr.	1/8,000 gr.	1/4,000 gr.	1/2,000 gr.
11 per cent.	14 per cent.	20 per cent.	27 per cent.

In this experiment two-thirds of the total number of tablets tested varied only from 2 to 4 per cent. from these figures when given in the corresponding doses. One, however, gave a fall of only 10 per cent. from 1/4,000 grain dose, and 12 per cent. from 1/2,000 grain. This would indicate that this preparation was certainly less than one-quarter of the strength of the solution against which it was measured, which in turn itself was not up to the average, giving 20 per cent. and 27 per cent. drops in pressure from the 1/4,000 grain and 1/2,000 grain, whereas the average, as mentioned earlier, was 25 per cent. and 34 per cent., respectively.

Also in this experiment there was one preparation which, administered in 1/2,000 grain dose, gave a fall of 37 per cent. in the pressure, indicating much greater strength. This same specimen administered to another animal gave the following results:

1/16,000 gr.	1/8,000 gr.	1/4,000 gr.	1/2,000 gr.
20 per cent.	25 per cent.	29 per cent.	38 per cent.

These percentages would appear to indicate a very much stronger tablet, in fact, from two to four times as strong as the first tablet when judged by corresponding dilutions. But it is very hard to carry over results in one experiment to another for an exact comparison, as the animals differ somewhat in susceptibility to the drug, one giving a uniformly greater reaction than another. But comparing the various tests on the same animal usually shows that the individual specimen which produced the greatest depression in one test also gave the best result in a second animal and *vice versa*.

A study of all the results we have obtained in the various animals, and of the averages which we give in the table, leads us to conclude that the nitroglycerin tablets hardly deserve the bad reputation which has been given them. It is true they vary considerably in strength, but of the seventeen specimens examined we think only two (Nos. 3 and 15) should be classed as distinctly poor. Next to these two come the great majority of the preparations, and a comparison of these with the percentage attained by giving the drug in the more minute doses of 1/16,000 and 1/8,000 grain indicates that they vary even as much as 100 per cent., some being half the strength of others. Two samples (Nos. 6 and 9) were considerably stronger than the average. Our results certainly confirm the view very generally held as to the variability in the strength of these tablets, but show that the opinion frequently expressed that these tablets are worthless is incorrect.

EFFECT OF AGE ON NITROGLYCERIN TABLETS.

We have had very largely to base our conclusions as to the effect of age on the tablets on the dates furnished us by the makers. Taking the table given earlier, we have grouped the tablets by the years in which they were made and averaged the results.

EFFECT OF AGE ON NITROGLYCERIN TABLETS.

Date of manufacture.	No. of specimens.	1/4,000 gr.	1/2,000 gr.
1901	2	28 per cent.	34 per cent.
1905	2	20 per cent.	27 per cent.
1906	3	28 per cent.	42 per cent.
1907, 1st 6 mos.	4	25 per cent.	36 per cent.
1907, 2d 6 mos.	5	25 per cent.	32 per cent.

This table would indicate that there was no marked deterioration in the tablets due to their age, a conclusion which is contrary to the general opinion. As a control to the 1901 specimens (which were both made by one firm) we tested some tablets which one of us had had in his possession since July, 1902, and during this time they had been kept in a cool dark place in a tightly-corked bottle. One of these tablets was as active as any preparation we tested, but several others which we used

proved to be absolutely inert. Leaving, then, the two 1901 specimens in the list out of consideration, the table still shows that the 1905 tablets were weaker than those made more recently, but the 1906 specimens show up very well.

Another check as to the effect of time on them was obtained by comparing the results of the experiments carried out in February, 1908, with those performed in May. An average of all the readings obtained during these two series of experiments is as follows:

	1/4,000 gr.	1/2,000 gr.
February, 1908.....	23 per cent.	36 per cent.
May, 1908.....	25 per cent.	32 per cent.

The figures are so nearly alike that they may be said to balance one another. Any conclusion based on these findings must be drawn very cautiously, but it would seem perfectly safe to say that tablets which are not more than two years old have lost practically none of their strength, but that if they are older than that they have probably deteriorated to a greater or less extent.

DIGITALIN TABLETS.

Another drug which in tablet form is very commonly employed in practice is the so-called digitalin. Under this name Merck lists three preparations: the "German," which is said to consist of digitalin (Kiliani), digitonin and digitalein; "French," an amorphous glucosid, which is practically insoluble in water; and "crystallized" digitalin, which is without action on the heart. The preparation used in these tablets is probably the "German," as the tablets are freely soluble in water. A hypodermic preparation of the digitalis group would be of very great use if it could be relied on in cases of emergency in which the preparation of the crude drug could not be used. In many cases in which we have used tablets, however, these have seemed to have so little effect that we secured a number of 1/100 grain and 1/50 grain tablets and assayed them. The method we employed was to test their effect on the frog's heart in a similar manner to that described in our paper on digitalis assay.[1]

The following doses indicate the amount necessary to bring the heart of a 20 gm. frog to a systolic standstill in one hour:

Five specimens took 1/20 grain (five 1/100 gr. tablets).
Four specimens took 1/25 grain (four 1/100 gr. tablets).
One specimen took 1/30 grain.

These figures become more significant when we consider that in our assay of the tincture of digitalis we found that an average preparation would stop the frog's heart in systole in one hour when administered in from 0.15 c.c. to 0.20 c.c. The immediate conclusion to be drawn is that digitalin is administered to man in entirely too minute doses. If on the frog 1/25 grain of digitalin equals 0.2 c.c. tincture of digitalis, then the corresponding dose for man should be 5/25 grain (1 5 gr.) instead of 1/100 or 1/50 grain.

This seemed such a very large dose compared with that in common use that we decided to test this ratio on dogs. We, therefore, prepared dogs in the ordinary way to take tracings from a heart with the myocardiograph and into the first we injected four 1/100 grain digitalin tablets which had been dissolved in salt solution. An analysis of the tracing showed an increase in the strength of the auricle which was quite marked while the ventricle was only very slightly affected. The heart rate was not lessened but increased twenty-five beats a minute. Into another dog of about the same size and prepared in exactly the same manner we injected 0.2 c.c. tincture of digitalis, and the tracings showed a very distinct increase in the strength of the auricle while the ventricle showed no change. The rate was slowed about ten beats to the minute.

A comparison of the results obtained in the two animals showed there is very little difference between the two forms of the drug when given in the corresponding doses determined by their relative effect on the frog. The balance is in favor of the digitalin in that it did show a very slight effect on the ventricular systole, while as regards the rate the tincture would have the preference. It is to be expected that the results would not correspond exactly, as in one case an approximately pure principle was injected while in the second a tincture was used.

This examination indicates that one reason at least why digitalin fails in a large number of cases is because it is not used in sufficiently large doses. For man the dose of digitalin to correspond with the usual 1 c.c. of the tincture would be somewhere about 1/5 grain instead of 1/100 grain. For the sake of safety we might cut this dose in half and say it should be 1/10 grain, which would still leave a great difference between the two amounts. The fact that digitalin should be given in such large doses is by no means new. Indeed, Merck gives the dose as from 1/10 to 1/2 grain. Among others who have recommended the larger doses may be mentioned Beates,[2] who prescribes 1/4 grain doses and in emergency 1/2 grain is given every two hours for a few doses. Administering it for months with occasional intermissions, he never saw harmful results to follow. Still more recently Arnold and Wood[3] call attention to the fact that 1/4 grain doses of digitalin are about equivalent to 1 c.c. of a tincture of digitalis (U. S. P., 1890, 15 per cent.). We conclude, therefore, that while the digitalin tablets are fairly uniform in strength, they are made entirely too weak for ordinary use in practice.

ERGOT.

We next took up the examination of a number of ergot preparations for the assay of which there exist several methods. The oldest, and that most generally used, is to ascertain the minimum amount of the drug which will cause distinct blackening of the cock's comb.[4] A second method, based on the recent work of Barger and Dale, consists in finding how much ergot it takes to transform the usual blood-pressure increase produced by adrenalin into a fall in pressure. This is the so-called "vasomotor reversal" method.

A third method, and one recommended by Cushny and also by Kehrer, is to test the effect on the uterus itself. The movements of the organ are recorded in the usual way by attaching levers to it and connecting them to a writing point arranged so as to register the contractions on the surface of a blackened drum. The animal is kept submerged in a warm saline bath during the course of experiment. Either cats or rabbits may be employed for the purpose, but we prefer the former.

By injecting varying doses of a standard preparation and of the unknown solution a very accurate estimate

1. It may not be out of place to call attention to the fact, which is not generally known, that this method of assaying digitalis preparations by their action from the frog's heart was first carried out in the pharmacologic laboratory of the University of Michigan under the direction and at the suggestion of Prof. A. R. Cushny of London, who at that time was Professor of Materia Medica and Therapeutics in Michigan University.

2. THE JOURNAL A. M. A., 1897, xxviii, p. 1200.
3. Am. Jour. Med. Sci., 1900, cxx, p. 165.
4. Houghton: National Dispensatory, 1905, p. 1728.

can be made as to their relative strengths by noting the size of the contractions produced by both solutions. In most of the animals 0.2 c.c. or 0.3 c.c. of a fluid extract will cause a distinct contraction. It was this uterine method which we adopted as being the most logical and satisfactory one, but no doubt each method will give good results in the hands of operators accustomed to their use.

We assayed all our preparations against one of the fluid extracts which we have marked 1 in the table given below. In this table we have arranged the different specimens, giving the amounts which would be necessary to administer to produce the same effects as 1 c.c. of our standard preparation.

1	Standard	same manufacturer	1.00 c. c.	Physiol. assayed.
2			1.00 c. c.	Physiol. assayed.
3			1.00 c. c.	Not assayed.
4			1.25 c. c.	Physiol. assayed.
5			1.00 c. c.	?
6			1.00 c. c.	Not assayed.
7			2.00 c. c.	Not assayed.
8		same manufacturer	(see below)	Not assayed.
9			(see below)	Not assayed.
10	Hypodermic preparations	same manufacturer.	2.50 c. c.	Physiol. assayed.
11			2.50 c. c.	Physiol. assayed.

Comparing these figures shows that five were practically alike; given in equal size doses they always produced corresponding results. One (No. 4) was about four-fifths of the strength of the others. Four (Nos. 6, 7, 8 and 9) are especially important, being made by one firm which makes no physiologic assay of their products. Of this group No. 6 gave good results; No. 7 required 0.5 c.c. to give a contraction equally strong to that produced by 0.25 of our standard. No. 8 we found to be practically inactive when given in doses up as high as 1 c.c. and 2 c.c., although our control was giving good results with 0.3 and 0.4 c.c. No. 9 when examined in February, 1908, gave contractions about equally strong as No. 1, but examined again in May proved inactive in 0.5 c.c. and 1 c.c. doses. Apparently it had deteriorated in the meantime.

Nos. 10 and 11, prepared for hypodermic use, were diluted with salt solution to fluid extract strength and then injected. They proved very weak, requiring 1 c.c. to give as good contractions as 0.4 c.c. of our control.

Referring again to Nos. 6, 7 and 8, it is interesting to note that they were made by the same firm that made the four specimens of tincture of digitalis one of us reported on last spring. These tinctures varied from one another as regards strength in the ratio of 1 to 4. At that time the firm had announced their intention to start physiologic assay work, but since then they have apparently experienced a change of mind, as they "do not think it right to control the effect of their medicines on man by experiments on the lower animals." After a survey of the varying strengths of their preparations comment is entirely superfluous.

In conclusion we think that no stronger argument could be brought forward as illustrating the necessity of the physiologic assay of these drugs than the results obtained with these eight preparations of ergot and digitalis.

ABSTRACT OF DISCUSSION.

DR. E. M. HOUGHTON, Detroit: I do not understand Dr. Edmunds' method of figuring the strength of the nitroglycerin. In my work on the assay of adrenalin and various other drugs by physiologic methods, I have found that it was always desirable to compare the unknown with the known under the same conditions. Was this done with the nitroglycerin preparations? In the routine assay of adrenalin and in conducting a few blood pressure experiments with nitroglycerin, I have found it desirable to determine the quantity of unknown which would produce the same rise or fall in blood pressure as a definite amount of the known, and from such data figure directly the percentage strength of the unknown required to produce the same physiologic activity as a definite amount of the known.

The method of testing digitalin tablets employed by Dr. Edmunds is the same that I have been using for the last ten or twelve years for the heart tonics, except that I have made the death of the frog the point for reading results, while Dr. Edmunds has taken the condition of the heart one hour after the injection of the drug as the time for making the reading. It has seemed to me that it was much better to adopt death as the final criterion, as is done in the standard test of antitoxins, etc., on guinea-pigs, than to attempt to read results from the physiologic conditions manifested by the animal. I believe that more accurate results may be obtained. We have found that with my method we can assay within 10 per cent. without great difficulty as a rule. Of course, there are difficulties; the frogs at certain seasons of the year vary more than under ordinary conditions. The Germanic digitalin as it appears on the market I have found, particularly during the last few years, to assay much more uniformly than it did prior to that time. I think that Dr. Edmunds is entirely correct relative to the dosage of digitalin.

I have recently had a number of experiments carried on to determine the value of the several methods that have been proposed for the assay of ergot. The reversal of blood pressure, by using adrenalin, has not worked satisfactorily on dogs. In fact, it is only in occasional dogs that you get such reversal. We have not tried rabbits or cats, but on dogs the results were quite unsatisfactory. Ergot is perhaps the most difficult of all the drugs that I have tried to assay by physiologic means. One must, by using the test of blackening of the cock's comb, be extremely careful of the fowls on which the experiments are done; otherwise errors will be made and no doubt different workers will get variable results.

PROFESSOR W. A. PUCKNER, Chicago: I believe that the profession does not realize the amount of work that certain manufacturing houses have done in this respect and that they have not received sufficient credit for their work. The manufacturing houses have been the pioneers in the standardization of drugs, and many firms have done much work which should receive more recognition from the members of the American Medical Association than it has. They have standardized many drugs and have received little return for it—not as much, I fear, as some manufacturers who have expended a like amount of money for printer's ink. Recently I examined a certain preparation and found one firm's product to contain only about 32 per cent. of what it was said to contain. I bought the second lot from the same firm and found it all right. I bought the third lot and it was all right. I then asked the manufacturer to explain, and I received the reply that apparently some mistake had been made in manufacturing the first lot. It is quite possible that these experiments will show that some of these drugs are deficient at times, though the house does not make a practice of supplying worthless drugs. But any one who sells medicine will have to take chances of having products shown up if they are not up to standard. When Professor Edmunds' paper is published, I hope that it will contain the names of the manufacturers of drugs that were reliable and of those that were not. The paper will lose much of its value if the names of the manufacturers concerned are not inserted. In the laboratory of the American Medical Association some chemical examinations of drugs have been made, and the fact that not only the quality of products, but also their source, is published will make manufacturers more careful, more so than if only the statement that A's product is good and B's product is not good were published. On the whole, the result of Professor Edmunds' investigation shows that the drugs are fairly good. I am especially glad to see the nitroglycerin controversy ended. It seemed hardly possible that the statement going around a year or two ago, that all nitroglycerin tablets were inert, could be correct. I did not take much stock in it at the time.

Dr. Edmunds' work shows that nitroglycerin tablets are of fairly good quality.

How many fluidextracts are there that in ten years do not appreciably deteriorate? The fluidextract you buy is likely to be 10 years old unless you take precautions. There comes in the objection to the use of ready-made preparations of drugs. The preparations themselves will no doubt be found to deteriorate more than the drug itself. Shall manufacturers finally be obliged to put a date mark on each drug? I think C. E. Vanderkleed has shown that digitalis fluidextracts deteriorate 10 per cent. per year. That is a relatively small deterioration, but I am quite sure there are many preparations of digitalis that will very appreciably deteriorate with time.

DR. M. CLAYTON THRUSH, Philadelphia, Pa.: I think that this subject is one of most practical importance, as it teaches forcibly four important points: First, that manufacturing drug establishments, whether large wholesale houses or reputable retail pharmacists, should use—especially in all drugs that contain glucosidal or alkaloidal principles—only assayed drugs. In other words, only drugs which come up to the pharmacopeial requirements of a definite strength. The second point it teaches is always to use drugs from reliable houses. Unless Dr. Edmunds gives the names of the houses from which he obtained the drugs referred to, the paper will not be of near the value it would otherwise be to practitioners. It is important to know which houses do put out reputable preparations. Third, these investigations prove that some drug houses use drugs which are absolutely worthless. How do you explain that? Those of you who have been in the drug business—and I have been—know that you can get the same drug in qualities worth 20 cents, 30 cents or 40 cents a pound—any price you want—from wholesale druggists; and the strength varies often according to the cost. Therefore, if pharmacists buy drugs of lower cost the quality will be lower. I think that the majority of pharmacists put out reliable preparations. Unfortunately, financial considerations at times come into play. Take ergot, for example; from no drug is it more difficult to isolate the various active constituents which readily disintegrate; and after extraction they are prone to deterioration. If your order goes to some druggist who puts up only two prescriptions a day and buys enough stock for two years, you do not get the results you would if the ergot was fresh and up to date. This explains why some men have pessimistic views in regard to certain drugs. Fourth, the drug, even from the reputable houses and with their best efforts, will vary according to the season of the year the drug is collected, etc. I know that Dr. Beates frequently uses as high as one grain of digitalin at a dose, and, furthermore, that he is frequently called up by pharmacists wanting to know whether he is not using too large a dose. In using digitalin we do not, as a rule, give a large enough dose to get effects. We now know that the equivalent part is 1/5 grain, instead of 1/40 or 1/50, and you can readily see that from ½ grain up to a grain is necessary to produce the desired effect. The digitalin referred to is marketed as Merck's "Germanic pure."

DR. A. S. VON MANSFELDE, Ashland, Neb.: We are told in THE JOURNAL of the American Medical Association that our Council on Pharmacy and Chemistry, for which I have the highest admiration, have examined a great number of drugs and that they fall into three categories: One category is absolute fraud, on which the Council speaks in no uncertain language; it is enjoyable to read. The other consists of tentatively accepted preparations; and then, unless I am mistaken, a great number which have been examined of which we know nothing. I am in the position of censor of the Nebraska State Medical Association of the advertisements that go into our state journal. I have endeavored very, very strenuously to inform myself and I am still very ignorant. The point has been exceedingly well taken that whenever a paper is read, on preparations that are below par, the author should have the courage of his convictions and say what is not good. Just look at it; we poor men in general practice are called in to a case of uterine hemorrhage, for example. We prescribe the drug we think will check it; we get a poor quality and let the woman pay the price of the experiment. Here is the matter in a nutshell: "Dear Doctor: I am informed you are very partial to Squibb's preparations." "You are correctly informed." "I want to assure you that our preparations are quite as reliable." "How can I prove this?" "Why, experiment with them," was the answer. I have neither time nor patience with that kind of performance. I learned the drug business more than forty years ago when it was necessary for me to make nearly every preparation in the Pharmacopeia myself, and in consequence here stands an old man who never prescribes a proprietary preparation. What is more, I will not prescribe even pills and tablets made elsewhere, and if I can not write a prescription for a pill or tablet and have my druggist put it up I am going to stop practicing medicine!

PROFESSOR W. A. PUCKNER, Chicago: The Council has so far chiefly taken up those preparations which have been voluntarily submitted by the manufacturers. I believe, however, that out of one thousand of the proprietary preparations now on the market which have not been submitted to the Council by their promoters nine hundred and ninety-nine could not be admitted, because they are in conflict with the rules of the Council. The Council repeatedly has discussed the desirability of publishing, besides a list of "accepted articles," also a list of all articles which have been rejected. It has always come to the conclusion that in the end more will be accomplished if only the most objectionable products are exposed. A great many products considered by the Council and rejected are being modified and corrected; when the reform is complete they will be accepted by the Council. This plan of action has, to a large extent, secured for the Council the cooperation of manufacturers, and I am certain has been to the best interest of the profession.

DR. G. H. HOXIE, Kansas City, Mo.: Is there the same rate of deterioration in the sealed packages of ergot (e. g., those intended for hypodermic use) as in the samples mentioned by Dr. Edmunds? I endorse what has been said as to the importance of giving the names of the manufacturers of the samples tested. These discussions and reports are practically useless to the medical profession unless the investigators have the confidence necessary to tell whose and what products they are reporting on.

DR. F. E. STEWART, Philadelphia, Pa.: The time has come when the scientific work done by manufacturing houses should be given due credit. Furthermore, it is important for those who are doing scientific work on the outside to consult with those who are doing scientific work in the laboratories of the manufacturing houses. I have known of several instances in which such cooperation has proved of mutual advantage. This especially applies to cooperation between the Council on Pharmacy and Chemistry and the manufacturers. If we could have more such cooperation between the Council and manufacturing houses it would be a good thing. As to the assaying of drugs—that is, the buying of assayed drugs and making them into preparations, claiming such preparations to be assayed—unless the finished product is assayed the claim is unwarranted. No manufacturer I know of would allow a fluidextract to go on the market until the finished preparation itself had been assayed to see whether the process of percolation had been complete. It is not safe to assume that the finished product conforms to the pharmacopeial standard because it is prepared from an assayed drug. The personal equation must be taken into account. One pharmacist is more skilful than another in extracting the drug by percolation, and the finished product will vary accordingly.

DR. TORALD SOLLMANN, Cleveland, Ohio: I may be misinformed, but I think that the name "digitalin" is applied to several very different preparations. Some of these have different toxicity, and in advocating large doses of digitalin which may be all right for one of these substances there is a good deal of danger if another should be dispensed. In such cases it seems necessary to specify the brand until we have a definite or accepted standard.

DR. C. S. N. HALLBERG, Chicago: The uniformity of medicines, of course, is the idea of the Pharmacopeia; not only to have purity and strength, but uniformity. Physicians must remember, however, that there are a great many drugs, particularly of glucosidal character, which vary considerably not only in their constituents according to the season and method

of collection and so on, but also in that the constituents are not well defined. There are very few, comparatively speaking, glucosidal drugs that a chemist can analyze and state the composition of as he can of alkaloidal drugs or most other substances; and you will remember that to-day these very largely used drugs, digitalis and ergot, have no official standard simply because the Committee of Revision, six or seven years ago, were not able to fix standards for these drugs. There is no necessity for the physician to be particularly concerned over the lack of uniformity or variation in potency in the principles of these drugs if he uses the drug itself. For instance, in digitalis the only safe, satisfactory agent as a cardiac is the tincture, provided it is made from the finest quality of digitalis. Now, such can be had. Allen's English digitalis leaves can be had by any pharmacist if he will pay $1.25 a pound, instead of 20 cents a pound. But what difference does it make what the price is? It is one of the things that, when a physician wants, he wants badly; he must have it, and the pharmacist makes just as much on the drug of the second-year growth as he would on the cheap kind. If diuretic effects are desired the infusion is preferable. Dr. Beates, in this Section a few years ago, stated that he gave digitalinum Germanicum in doses of 1/16 grain. Now we are told he is giving ¼. Next year perhaps he will be giving it in 2 or 5 grains, because it does not represent the properties of digitalis. And the same is true of ergot. There is no preparation to-day that takes the place of the well-made fluidextract of ergot such as Squibb's. There was no question of such fluidextract of ergot being efficacious, because every grain of ergot was picked out by hand. Many of you will remember the long tables around which women were seated picking over every grain. That fluidextract was allowed to stand three to six months before being bottled, and this gave it that peculiar ethereal odor which made it agreeable and serviceable. There are many constituents in plants beside the particular active principles. We have seen in this country active principles run the gamut from the resinoids in Cincinnati, where the pure principle (?) and whatever precipitated was collected and labeled with "in" and called an eclectic alkaloid or "concentration," while the real active principle often went down the sewer. We have the alkaloids from Ravenswood and other centers for exploiting the medical profession with active principles where they even discover active principles in magnesium sulphate or *Cactus grandiflora!* When the physician is in doubt about active principles let him find an honest, skilful pharmacist who will buy a quality of drugs which will insure their giving the desired results when made into first-class fluidextracts or tinctures. The less he believes that everything that comes from Germany is better than that produced in any other country the better for him.

DR. C. W. EDMUNDS, Ann Arbor, Mich.: I tried the vasomotor reversal method on several cats, but did not find it very successful; in some even as large amounts as 30 c.c. of a fluidextract of ergot gave no distinct reversal, while a subsequent injection of 1 mg. ergotoxin (kindly sent me by Dr. Dale) gave the desired result. This phenomenon is shown much better on cats than dogs. I tried the cock's-comb method twice, but did not carry it further, as I got blackening of the comb from one specimen which proved inert when judged by the action on the uterus. As to the agreement of these preparations with the pharmacopeial standard, that is just where the trouble is—there is no such standard. Each manufacturer may assay his own preparation, but only to his own standard, which differs from other manufacturers' standards. So while we may be getting standardized preparations all the time they need not necessarily be alike unless they happen to come from one maker. What is needed is a national standard to which all manufacturers will agree. I can not say whether the sealed tubes of ergot deteriorate or not. Both specimens I examined were made by one maker and were alike but very weak. As to the original strength I can not say. I have assayed a tincture made from Allen's digitalis leaves and found that it was just about the same strength as the tinctures made from leaves obtained elsewhere.

I decided for certain manifest reasons that it perhaps was not best to publish the names of the makers of the various preparations which I examined. I believe, however, that such publicity will come in time, and when it does it will have a wholesome effect and will be but a matter of justice to those firms who are putting out reliable products.

OSTEOPATHIC VERSUS DRUG TREATMENT.*

M. CLAYTON THRUSH, PH.M., M.D.
PHILADELPHIA.

A concise exposition of the important principles of osteopathy and their relation to scientific medicine:

"The most experienced surgeon knows nothing of anatomy in comparison with the educated osteopath."

"The osteopath is a physician and surgeon in the best sense of the term, thoroughly conversant with the anatomy, physiology and pathology of the body."—*The A. B. C. of Osteopathy, 1907.*

During recent years a number of cults or sects have sprung into prominence, the cardinal features of the majority being an alleged cure of diseased states by the employment of other means or agents than drugs, which latter are decried and declared as poisonous and injurious.

Conspicuous among these is a system called osteopathy, and during the past few years, because of attempts to secure legal recognition, it has come into sufficient prominence to attract the notice of the members of the medical profession and the laity throughout the United States, as its disciples can be found in almost every village and hamlet in this country.

It has been one of the subjects for discussion at many of the local and state society meetings in the various states, especially since the osteopaths have been very active in legislative matters. There are now thirty-eight states that have laws recognizing and regulating the practice of osteopathy, and the medical profession, as a whole, has been disgracefully apathetic and deserves no credit for permitting this official recognition without most emphatic protest.

I sincerely believe that the majority of the members of our profession possess but a vague and indefinite knowledge as to what osteopathy really is, and the great majority of us have a very imperfect conception of its so-called principles and the precepts based thereon.

Realizing this fact, the object of this paper is to present a concise yet comprehensive view of this alleged science of osteopathy as defined in their standard textbooks and periodicals, so that, by being familiar with its tenets and principles, we can intelligently work together as a body, first for the protection of the public and, therefore, indirectly for the higher interests of medical science and its art, on which afflicted humanity relies for relief, cure and the prevention of disease.

WHAT IS OSTEOPATHY?

Hulett, in his "Principles of Osteopathy," defines it as follows: "Osteopathy is a system of therapeutics which, recognizing that the maintenance and restoration of normal functions are alike dependent on a force inherent in protoplasm, and that function perverted beyond the limit of self-adjustment is dependent on a condition of structure perverted beyond these limits, attempts the re-establishment of normal function by manipulative measures designed to render to the organism such aid as will enable it to overcome or adapt

* Read in the Section on Pharmacology and Therapeutics of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

itself to the disturbed structure." Thus the pathology of osteopathy repudiates science and explains typhoid fever, tuberculosis, scarlet fever, pneumonia, smallpox and other ills of humanity as due to misplaced tissues.[1]

Osteopathic training is claimed so to augment the sense of touch that the fingers are enabled to locate the exact spot of the dislocation, and by osteopathic knowledge of anatomy manipulate, as no one else can, the tissues back to their proper relationship and thus cure the afflictions of humanity!

ORIGIN OF THE TERM OSTEOPATHY.

The term osteopathy is from the Greek words "osteo" (bone) and "pathos" (suffering) and literally signifies "bone suffering." But this does not refer to "bone disease" or "bone treatment," as we might suppose, but has reference to the chief basal fact of the body, viz., the order and mechanics of the body. It is on this fundamental idea of order and mechanical relation in the body that the alleged science is based.

ORIGIN OF THE SCIENCE.

The founder of the alleged science of osteopathy was Dr. A. T. Still, who for (a few) years was a practitioner of the erroneously called allopathic school. He announced publicly the principles of the new science at Kirkville, Mo., in 1874.

OSTEOPATHIC EDUCATION.

The osteopathic schools, according to Dr. (never received M.D.) O. J. Snyder, president of the Pennsylvania Osteopathic Association, are well versed in general medicine, and they claim to have had originally four terms of five months each, but recently this has been changed to three terms of nine months each. The reason for this change has not been given. The total number of hours devoted to the complete course is about the same as in the average regular medical school. They claim to teach everything the same as the regular schools, except materia medica, for which they substitute the principles of osteopathy. These statements are published in the March, 1907, issue of their leading journal entitled *Osteopathy*. As a matter of fact they teach the fundamentals erroneously, especially anatomy and physiology.

Now, if these statements are true that they teach the same subjects in as thorough a manner and devote the same number of hours to the subjects, then why do they object to the graduates of their schools passing the same examination as do the graduates of the other medical schools, and then be left to practice whatever branches of therapeutics they may elect? Because, like all sects, they wish to have sole control; their existence depends on self-control.

In other words, why not place all medical graduates on an equality, as they should be then required to possess the same preliminary education, a similar medical course for their degree and the same state board examination, differing only in substituting osteopathic manipulation for drugs under the subject of therapeutics in their college and state board work? Is not this a just and equitable arrangement? On therapeutics only do the allopathic, homeopathic and eclectic schools differ at present.

The only way to attain this end is one medical board made up of representatives from each system of medicine. This is what we desire the legislature of this and other commonwealths to grant for the protection of the educated physicians, no matter what the school, against the quacks, charlatans and incompetents who pose as physicians. This is all that we desire, and such an arrangement would be just as advantageous and protective to the properly trained osteopath as it would be to the members of the regular school.

In an address to the members of the legislature of Pennsylvania in 1907 by the Pennsylvania Osteopathic Association in support of the bill to regulate the practice of osteopathy, favorable consideration of their present bill is asked for the following alleged reasons:

First.—Because osteopathy, as an accepted science in the practice of the healing art, has come to stay, as can be testified to by the thousands of its patients in Pennsylvania to-day.

Second.—Because of the great success and popularity of osteopathy as a method of healing, the public are demanding protection from impostors and frauds, who are endeavoring to practice the art without the proper educational qualifications, to the detriment of the health of the credulous and uninquiring.

Third.—Because all other forms of practicing the healing art, allopathy, homeopathy and eclecticism, are regulated and protected by the laws of Pennsylvania.

Fourth.—Because the osteopathic profession desires only fair play and a square deal with other schools of medicine, and this bill provides that applicants to practice osteopathy shall take the same examinations as are required of those wishing to practice medicine, and that the state medical council shall issue licenses to practice osteopathy in the same manner as it issues licenses to practice allopathy, homeopathy or eclecticism.

Fifth.—Because a consideration of the present bill will disclose that the osteopaths are ready and willing to adopt the same educational qualifications as required by the other schools, both preliminary and collegiate.

Now, if these are their true reasons for official recognition, as they pretend them to be, having presented them as such to our legislature, then why do they object to one medical board with proper representation? There can be but one explanation for an objection by the osteopaths: They do not intend to furnish the same qualification for licensure. Otherwise they would not have presented their bill providing for a distinctive board composed of osteopaths. The reasons for this are obvious to any one.

THEORY OF OSTEOPATHY.

According to the statements of the leading osteopathic authorities the osteopathic treatment is purely mechanical and consists of manipulations which seek to remove all obstruction to the vital forces of the body, and the theory on which it rests is that all diseases are due to some mechanical obstruction to the vital forces in the body, which may be removed mechanically without use of drugs. They claim that the method of treatment is based on a thorough knowledge of the normal and abnormal anatomy and physiology of the body.

THE CAUSE OF DISEASE.

Here the osteopath likewise differs from medical practitioners. The ideas held by osteopaths as to the etiology of the various diseases may be summed up as follows:

1. Dr. Andrew Still in the January, 1908, issue of the *Ladies' Home Journal*, writing on the subject, "How I Came to Originate Osteopathy," makes the following statements: "I do not believe, and I say this after forty years of close observation and experiments, that there are such diseases as fever—typhoid, typhus or lung—rheumatism, sciatica, gout, colic, liver disease, croup, or any of the present so-called diseases. They do not exist as diseases. I hold that separate or combined they are only effects of cause, and that in each case the cause can be found and does exist in the limited or excited action of the nerves which control the fluids of a part of or of the entire body. The therapeutics of osteopathy are independent and original, and as extensive as the entire medical and surgical fields."

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First.—Perverted Mechanics: That is mechanical derangement of the anatomic parts of the body. A very common cause of disease. Structure determines function. If the structural relations of the body tissues are all right, then the functions are normal, but if the structure is perverted in any way then the function is also perverted, and this is what we denominate as the cause of disease. This is the Magna Charta of osteopathic declaration, the golden rule of osteopathic procedure.

Second.—Bacteria: Bacteriology is alleged to be taught in every osteopathic school with the same exactness as in the best regular schools.

The osteopath has always held to the germ theory as the cause of certain diseases, but the osteopath does not use the same means to recover the health of a patient so infected, yet he recognizes that such conditions exist. The osteopath, emphasizing that disease is primarily of mechanical origin, holds, therefore, that germs are generally a secondary factor in the cause, and he believes that so long as the tissues of the body are healthy no germs can infect the body. There must be a suitable soil for the bacteria to live in or the bacteria will not cause infection. He further believes that if any part of the body is infected, and he can restore a good circulation of pure blood to the part so as to restore a healthy condition of the tissues, the invasion of bacteria stops then and there. I should like to know what specific dislocations cause, respectively, the infections, as microbic diseases result from misadjustment of structure, according to osteopathy.

The osteopath recognizes that disease may be due to toxic or poisonous compounds which may enter the system, but you will notice that the cause of the presence of toxic products is due to a perverted function, which is the result of a perversion of structure.

In case of the ingestion of a fatal dose of a poison, the osteopath would give the usual antidote and treat accordingly. They have a course in toxicology in their college course, claimed to be properly taught.

OSTEOPATHY AS A SYSTEM OF MEDICINE.

The osteopaths state that osteopathy is not a part of medicine and has nothing in common with it, other than the professed aim to cure disease. Its diagnosis and treatment are wholly unlike those of any other system of healing. The aim of medicine is to relieve symptoms, whereas osteopathy has for its object the removal of the cause. The regular physician treats symptoms, whereas the osteopath treats the lesion causing the symptoms.

OSTEOPATHY AS RELATED TO MASSAGE AND SWEDISH MOVEMENTS.

Osteopathy is claimed to be entirely distinctive from massage or Swedish movements, resembling them only in being an application of a mechanical principle. Massage and Swedish movements are only systemic exercises, whilst osteopathy is adjustment. Osteopathy is not exercise, and it is not given with the object of giving exercise to a patient, although in taking the treatment the patient receives a variable amount of exercise according to the lesion requiring adjustment.

OSTEOPATHY AS A SCIENCE.

The osteopath looks on the human body as a machine, and if the machine is in perfect order and harmony within itself then a state of health prevails. The bones form the foundation and framework of the body. The muscles and ligaments are strung on the bones, and the bones have more to do in determining the order and form of the body than any other tissue in the body. The nerves become irritated by physical, chemical, traumatic or other causes, and these irritated nerves cause the muscles and ligaments to contract, and this brings about more or less maladjustment in the body.

These maladjustments interfere with the function and are termed lesions, or the seat and underlying cause of disease. All diseases are due to lesions, and these lesions may occur in any portion of the human body. The osteopath claims that with a proper knowledge of the anatomy of the body he can detect these lesions, and the purpose of his treatment is to remove them and thus establish harmony and order in the body, which is the basis of health. The body being a vital machine, all it needs is to be able to perform its functions, and then it recuperates itself. Hence, by various manipulations, using the bones as levers, the purpose of the osteopath is to readjust a maladjusted body as structure determines function, and if we re-establish a normal structure then normal function will result. To cause this adjustment may require only a single movement, as in reducing certain dislocations as around the elbow or hip joints by rotating the arm or leg and pushing into position; or it may require several weeks' treatment, as where certain of the vertebræ are involved, and in giving the treatment the practitioner may have in view either or both of two objects. He works to right the spine and to affect it alone, or he works on the spine to affect some other part of the body pathologically connected with the part of the spine in question.

In the treatment of the spine, twenty-one different methods of manipulation are resorted to according to the lesions present, as described in Hazzard's Practice of Osteopathy. I will merely mention two of them to show the kind of methods that are used.

For relieving contractures and toning up flabby muscles the patient lies on the ventral aspect of the body in a comfortable position, the head is turned to one side, and the arms hang loosely down at the sides of the table. The patient relaxes all his muscles, and the osteopath stands at the side of the patient and uses the palm of the hand or the cushion of the fingers to thoroughly manipulate and relax all the spinal muscles. In treating the muscles on the side toward him he works from one end of the spinal column to the other in a direction at right angles to the general direction of the muscular fibers. He treats the muscles of the opposite side by spreading them away from the spinous processes.

In case of curvature or sagging of a portion of the spine, or lateral deviation of the vertebræ, the patient lies on his side, and the practitioner stands at the side of the table in front of the patient. With one hand he grasps the uppermost arm of the patient just above the elbow; the other hand he holds under the spinous processes or any portion of the spine under treatment. Now, using the arm as a lever, he pushes it downward and forward, at the same time springing the spine toward him.

In order to have a practical demonstration of this treatment I consulted one of our prominent osteopaths, a member of the faculty of the Philadelphia College of Osteopathy, and, as expected, I had a slight curvature of my spine, etc., which he manipulated, using a num-

ber of their classical manipulations. He informed me that each osteopath has certain manipulations characteristic to himself in addition to the classical ones, and he also told me that all that they do is to stimulate the circulation and make people "feel good." "That is why osteopathy is so popular."

THE OFFICE EQUIPMENT OF AN OSTEOPATH.

The office equipment usually consists of a reception room and one or more booths or "work rooms," in which there are a leather covered table and several chairs or couches. The patient, if a man, removes his top clothing down to his underclothes, except his trousers; and if a woman, after removing the outer garments in a similar way, she wears a loose gown during the treatment. "Their peculiarly sensitive sense of touch responds through two thicknesses of clothing, as they determine the lesions causing the disease with the *x*-ray tipped digital phalanges of their fingers which show the maladjustments of structure and dislocations." They certainly possess supernatural power of palpation and, strange to say, it is all acquired in three years!

As a rule, their offices are attractive and handsomely fitted up, even in the country towns.

CHARACTER OF CASES TREATED.

The majority of the patients are from among the middle and upper classes, as their treatments are rather expensive for poor people, although they have free dispensaries connected with their colleges. Their usual fee is $25.00 for twelve treatments, some charging more, some less. The time required for a treatment varies from ten minutes to an hour.

Osteopathy will never interfere to a great extent with medical practice, as the great majority of the patients are treated in the offices for conditions that allow them to be around, and if they are really sick with some acute disease, a regular practitioner is called, so that osteopathy is a sort of gymnastic specialty, as it were, and not invoked as yet for illness which regular practice confronts. Of course, some osteopaths attempt to treat serious cases, but they are in the minority.

Thus we have a clear conception of what osteopathy really is and stands for as stated by the leading authorities of their school.

Now let us consider the relations between osteopathy and the various branches of medicine, remembering that they treat all these affections solely by manipulation, as they are opposed to the use of drugs in the treatment of disease.

OSTEOPATHY AND GENERAL MEDICINE.

The osteopath represents himself as a competent clinician and treats all the various medical diseases, including the acute infectious diseases such as typhoid fever, tuberculosis, malaria, pneumonia, etc.

Diseases of Children.—The osteopath treats all the various diseases of childhood, including the contagious type, such as diphtheria, scarlet fever, etc., and he is opposed to the use of antitoxin in diphtheria and also to vaccination.

Ophthalmology.—The osteopath treats such diseases of the eye as granular eyelids, strabismus, pterygia, partial and total blindness, eyestrain, etc., and he does it by manipulation alone, for according to their pathology these conditions are due to maladjustments. They treat practically all the usual eye diseases.

Diseases of the Ear.—In the treatment of diseases of the ear, the osteopath uses a head mirror and ear speculum. He treats various types of otitis, deafness, earache, etc. He uses and recommends antiseptic agents in solution, injected by means of an ear syringe, yet he claims to be opposed to drugs!

Diseases of the Nose and Throat.—They treat the various affections of these parts, including such diseases as laryngitis, tonsillitis, parotitis, pharyngitis, stricture of the esophagus, etc.

Neurology.—They treat the various nervous affections, such as chorea, epilepsy, locomotor ataxia, paralysis agitans, etc.

Diseases of Women.—Diseases of women are a most important part of osteopathic practice, and they make vaginal examinations for the purpose of diagnosis, and in giving treatment they not only treat the patient along the lumbar portion of the spine, but also treat through the vagina, especially in such conditions as uterine displacements and prolapsus. They treat various menstrual disorders, ovarian and tubal inflammations, leucorrhea, uterine tumors, carcinoma, etc. Some of their treatments for gynecologic conditions are of especial interest, and they have special text-books on osteopathic gynecology. The following is a good example: In Hazzard's Practice, page 418, for the treatment of uterine hemorrhage the following procedure is recommended: "Often a quick, rather hard jerk at the hairy covering of the mons veneris is sufficient to contract the vessels and stanch the flow. Stimulation of the clitoris is also an important means."

Obstetrics.—Osteopaths treat and deliver pregnant women and recommend special procedures to aid in the delivery of the child. A few of their special manipulations are of interest, as recommended on page 418 of Hazzard's Practice. To deliver the placenta "a quick pull at the mons veneris will aid in expelling it." "Desensitize the clitoris to stop after pains."

Genitourinary Diseases.—They treat orchitis, varicocele, enlarged prostates, impotency and even gonorrhea and syphilis. Gonorrhea is usually readily cured without the usual sequels (page 422, Hazzard's Practice), and it is done by manipulations which "frighten the gonococcus."

Orthopedic Surgery.—Osteopaths make a specialty of reducing deformities and dislocations; hence they treat all the affections classified under this heading, such as spinal curvatures, Pott's disease, etc.

Diseases of the Skin.—They treat the common skin diseases, especially those of systemic character, including syphilis, etc.

Surgery.—Osteopaths recognize surgery as a branch of medicine at times necessary, but some of the treatments that they recommend before resorting to surgical means are particularly interesting. One will suffice to illustrate some of the barbarous and dangerous procedures that are advised in their text-books and carried out in actual practice among civilized people throughout the United States.

In Hazzard's Practice, page 174, we read under treatment of intestinal obstruction: "Some writers recommend thorough shaking of the patient. The patient is held by four men by the arms and legs, first with the abdomen upward, then downward, while the shaking is done. There should be much persistence in the treatment." This treatment would certainly relieve the obstruction, especially if the intestines are soft and gangrenous, but the undertaker's services would be required a little later as an adjuvant to the treatment.

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LIMITATIONS OF OSTEOPATHY.

Hence one can readily see from the above classifications that osteopathy has no limitations, as they claim to cure every disease that ever has existed or ever will exist, as can readily be proved by an examination of Hazzard's work on the practice of osteopathy. They even treat pneumonia, typhoid fever, tuberculosis, acute nephritis, uremia, smallpox, parasitic diseases, such as those caused by various intestinal worms, and even tumors melt away as snow under the midday sun, according to their authorities.

DO OSTEOPATHS USE DRUGS?

It is frequently stated that osteopaths condemn the use of drugs and are opposed to them. A few examples will prove the falsity of such statements. As stated before, in the case of acute poisoning, the usual chemical antidotes are ordered, and they are taught these in their medical course. In Hazzard's Practice, page 390, we read under treatment of variola: "The ordinary methods of preventing pitting by keeping the face washed with a carbolic or mercuric chlorid solution and covered with clean cloths saturated with warm water should be used."

Again, on page 394, under worms: "For tape-worm the patient should then drink quantities of pumpkin-seed infusion or eat a gruel made of mashed pumpkin-seed."

On page 353, under myxedema, we read: "It seems that in these cases thyroid feeding, a treatment regarded as specific, would be necessary."

On page 227, under the subject of chronic cystitis, we find: "In this form and in septic cystitis, washing out the bladder is a valuable aid to the treatment. For the chronic cases, sterile normal salt solution (40 to 60 grains to a pint) or weak solution of mercuric chlorid (1:50,000 or 1:100,000) are recommended. For septic cases, a saturated solution of boric acid may be used. Their explanation of microbic infection is here overlooked.

On page 162, under cholera infantum, we find: "Hot injections are valuable measures, aiding in the removal of the irritant material from the bowel. A mustard plaster over the abdomen relieves pain." These statements are taken from one of their leading books on the practice of osteopathy. But how in the world any one can stop the growth of diphtheria bacillus in a child's throat by raising the clavicle and pressing the first rib downward and forward, working at its central articulation to correct the position of its head, is beyond my comprehension. Or in the case of hemorrhage complicating typhoid fever, inhibition of peristalsis should be done by work from the ninth dorsal vertebra down along the lumbar region. How this checks hemorrhage I should be pleased to hear some one explain. In my judgment, it would increase it, and if manipulation is very vigorous the danger of perforation would be greatly intensified, yet this is the treatment recommended.

Also, where a child is suffering from infection with the oxyuris vermicularis around his rectum, how raising the lower ribs causes their expulsion requires a little Christian Science faith to comprehend, does it not? Their vasomotor are explanation is disproved by the facts of physiologic science!

Several of the patients who have been treated recently at the Philadelphia College of Osteopathy have been advised to use certain medicaments at home when manipulations did not relieve them, as they have told me personally, yet the osteopaths state that drugs are poisonous and injurious and they are opposed to them. I have seen prescriptions in drug stores written by osteopaths!

OSTEOPATHIC STATE BOARDS.

Now, what are the objections to the osteopaths receiving official recognition in the various states and being licensed as the result of examinations before state examining boards composed of osteopaths?

1. They are not required to possess the same preliminary educational requirements as members of other medical schools, some of their graduates not even possessing a grammar school education.

2. The course is completed in three years, while regular practitioners are required to take four years.

3. They represent themselves as physicians when using the title Doctor, and they treat every disease that is known, whether they can do good or not, manipulation often imperiling the life of a patient when suffering from certain affections, like tubercular arthritis or intestinal obstruction, etc.

4. They treat any one who applies to them whether they are under the care of another physician or not; hence have no code of ethics, except to use a name and collect the fee.

5. They treat patients in conjunction with practitioners of other schools, illustrating that the commercial weakness of birds of a feather affects the medical profession as it characterizes man everywhere.

6. A number of them secretly treat patients who are under the care of a regular physician.

7. If a patient's condition becomes serious they promptly drop the case and have the family send for a physician. They do this only because they can not fill out death certificates. License them and they can. That is what they desire.

8. They occasionally write prescriptions for drugs or give verbal orders for their use, notwithstanding their claim that they are opposed to the use of drugs as remedial agents.

9. They have not the slightest knowledge of the proper phraseology in the construction or writing of a prescription.

10. If they should become licensed, they will not confine themselves to manipulation, but will attempt to practice regular medicine as well, thus antagonizing their own statements by using drugs and baths, yet they claim to oppose them.

11. They presume to pose as expert witnesses in litigation.

12. They are opposed to vaccination, the use of serums, such as diphtheria antitoxin, and other agents, such as electricity, *x*-ray and hydrotherapy.

Now, what is the cure for the present existing conditions in the medical profession throughout the United States?

1. A one-board bill with proper representation, the same educational requirements and equal recognition to the graduates of all the various medical schools, the examination being the same in all subjects, except therapeutics, on which questions relative to the particular system of medicine studied should be asked, or the subject omitted entirely, allowing each one who receives the licensure to practice whatever system of medicine he deems best, i. e., protecting the public from the fearful consequences of incompetent practitioners by requiring

by law that everybody who offers his services and assumes the responsibilities of treating disease, deformity and injury, should qualify under one standard of knowledge, training and ability, and this opportunity free for all alike. There are forty-four states at present that have a one-board bill in operation.

2. This standard to be the same in each and every state in the Union, so that proper reciprocal relations would be established which would enable a physician receiving the licensure in one state to transfer and practice his profession in any other state should he so desire, and at any time.

3. Any physician addicted to drugs or alcohol, or convicted of criminal or malpractice, abortion or other practices contrary to the laws of his state, shall have his license permanently revoked, and said revocation to bar him from the practice of medicine in any other state.

4. A common standard of preliminary education should be exacted of every person desiring to enter a medical school anywhere in the United States, and every student should be required to pass this examination, no matter what his credentials are, not excepting a degree in arts or science; said examination to be about equal in standard to the present preliminary examination in law in Pennsylvania or New York or the equivalent of the present medical standard of the New York Board of Regents. This standard would debar a large number of students who do not possess the proper preliminary education and who are a disgrace to the medical profession.

5. Every applicant should be of sound mind and body and of good moral character.

ABSTRACT OF DISCUSSION.

DR. ALEXANDER S. VON MANSFELDE, Ashland, Neb.: There are very few members in this hall, I am afraid, who have not been guilty, when their patients have asked: "Have you any objection to my taking a few osteopathic treatments?" of answering: "Oh, I don't suppose it will hurt you. It is just massage." I hope that members of the American Medical Association will not hereafter commit the wrong of saying that osteopathic treatment is massage.

DR. JOHN KERCHER, Chicago, Ill.: I wish to quote from a booklet by W. Livingston Harland, an osteopath, a definition of osteopathy assumed to be authoritative. When I get through I shall be glad if any one can enlighten me on the meaning, as I do not understand it yet, although I have read it several times: "Osteopathy may be formally defined as the science which consists of such exact, exhaustive and verifiable knowledge of the structure and functions of the human mechanism, anatomical, physiological and psychological, including the chemistry and psycho-physics of its known elements, as has made discoverable certain organic laws and remedial resources within the body itself, by which nature under the scientific treatment peculiar to osteopathic practice, apart from all ordinary methods of extraneous, artificial, or medical stimulation, and in harmonious accord with its own mechanical principles, molecular activities and metabolic processes, may recover from misplacements, disorganization, derangements, and consequent disease, and regain its normal equilibrium of form and function in health and strength." The volume is called "Osteopathy: The New Science." It stands as a sort of text-book for the osteopathic cult and the author, in his introductory, says: "This little volume, which we believe is the first that has ever been published in book form on the science of osteopathy," etc.

DR. R. A. LYMAN, Lincoln, Neb.: The osteopath surrounds some of the newer methods in therapeutics by a system of graft which is not understood by the layman. This fact medical men should remember. To the layman's mind osteopathy and massage are one and the same. A short time ago a prominent member of the faculty of the University of Nebraska asked me what I thought of osteopathy. He had been treated by an osteopath, had been benefited, and now praised the "doctor" highly. I gave him the substance of the "system." He had supposed that osteopathy and massage were identical. When I took the trouble to explain that massage is but one of the methods of treatment that has been used for years by the regular profession he regarded osteopathy in an entirely different light. Psychotherapeutics and Eddyism are identical in the mind of the average layman. It is our duty to explain these fads to our patients. If this is properly done the average thinking man will get the proper perspective. Such a procedure on the part of medical men will do more towards eliminating these systems of graft than all the legislation which might be enacted.

DR. M. CLAYTON THRUSH, Philadelphia: I presented this paper primarily for three reasons: First, to show in a concise way what osteopathy really is and what constitutes its important principles. I have talked with many physicians on this subject and none could give me anything like a satisfactory explanation of the claims of osteopathy. Second, to show how dangerous it is. Every one in this room has been asked by a patient whether he should try osteopathy. Often these patients have a disease in which the methods used by osteopaths will do harm and may even cause death. Third, to plead for a one-board medical law. We have only ten states in this great union without such a law at present! Each man who practices healing, no matter what his cult, should be required to pass the same medical examination and with the same preliminary requirements, etc. We have only seven states which do not require every candidate to be at least a graduate of some reputable and chartered school of medicine; and with only seventeen states remaining which do not possess reciprocal relations, our work is almost but not quite finished. We want to get these seven states in line. When we do this we shall have this task complete. Do not forget the important facts which I have outlined in my paper and which prove that in recommending osteopathy you are recommending to your patients procedures that may mean death or at least harm to your patients.

MEDICAL VERSUS SURGICAL TREATMENT OF AMEBIC DYSENTERY.*

JOHN MILTON HOLT, PHIL.B., M.D.

Passed Assistant-Surgeon United States Public Health and Marine-Hospital Service.

BROOKLYN, N. Y.

In a paper[1] read before this association in 1907, I advocated surgical treatment of all patients with amebic dysentery, in whom, after a fair trial of other forms of treatment, *Amœba coli* could be found in the stools.

In offering some definite time limit during which these various other methods of treatment could be carefully and impartially exhibited, before classing a case as chronic (and, in my opinion, surgical), I suggested a period of about a year.

In the discussion of the paper, Dr. A. J. MacKenzie, Portland, Ore., expressed the view that I had been too conservative in waiting a year before operating, and suggested that appendicostomy be performed if the disease proved resistant after six months.

The fact that this question is of such vital and practical importance is my justification for presenting another paper on the subject.

Another incident influencing the production of this paper has been the appearance, since last year, of several other articles dealing with different phases of amebic dysentery. The topic may not arouse the lively interest

* Read at the Annual Meeting of the Oregon State Medical Association, Portland, Ore., July 2, 1908.

1. Amebic Dysentery, Chronic, a Surgical Disease, N. Y. Med. Jour., Nov. 16, 1907.

of all, but should a physician consulted in a case of amebic dysentery be unfortunate enough to acquire the disease, the question would then appeal to him very strongly.

At one time I was a victim of this malady, and for five years I have made an exhaustive study of the subject in all its phases. I consider it an obligation, therefore, to record my observations, experiences and opinions, and leave for time and the majority experience of other workers in the same field to determine the course to be generally adopted for the greatest good to the greatest number. As it is now, too many of these patients are receiving too little serious attention, when their salvation could be worked out at the expense of but a modicum of mental energy.

All observers are agreed as to the marked tendency of amebic dysentery to resist all ordinary treatment and to become chronic; a fact which renders it all the more imperative for us to devote our best endeavors to the development of a rational, uncompromising plan of attack in dealing with the disease in its chronic form. We should not permit any case to run on indefinitely, because the patient is "doing fairly well," when it could be cleared up once and for all by simple surgical treatment.

In one of my cases reported last year, treatment by colonic irrigation was begun as soon as amebas were demonstrated, or about three weeks after the onset of symptoms. This treatment was continued daily for over a year, except on the day on which microscopic examination was made. Amebas disappeared from time to time, only to return. Undue exertion or ordinary physical fatigue always caused an exaggeration of the symptoms, and a life of semi-invalidism seemed a certainty. During part of that time irrigation was practiced twice a day (always once a day), care being taken by change of position to encourage the flow toward the transverse and ascending colon. Several hours were devoted each day to the careful, conscientious employment of the irrigation treatment, with the full hope that recovery would be the reward. Nothing was considered too much trouble. But while there were periods of improvement, symptomatic improvement—if we can speak of it as such—the parasites persisted, no matter what irrigating solution was employed. Hope began to wane. For a time ice-water irrigations were used, as recommended by J. P. Tuttle. The irrigator was filled with cracked ice and the solution allowed to stand in it for about twenty minutes before using, when as much as five quarts of it would be introduced at one time. As an indication of how cold the solution was, I would say that chipped ice still remained in the irrigator after the entire solution had been passed into the colon, and the hand, held against the abdomen over the transverse colon, could detect the ice-cold temperature of the skin of the abdominal wall, transmitted through all the structures and tissues between the palpating hand and the colon.

The sigmoidoscope was used, and it was seen that no lesions were present below the sigmoid. Operation was decided on in this case after one year, but owing to family reasons its employment was not possible until after two years.

Will anyone offer and prove a valid reason for continuing medical treatment indefinitely after an experience of this kind? It should be added, however, that this is not an isolated example, but, unfortunately, is the experience in a large percentage of cases.

Any man who has had both medical and surgical experience with this disease will firmly endorse my line of classification, with the principles of treatment as suggested for the two classes of cases, acute and chronic.

But it is not to those men of the profession to whom I would particularly address myself (except for confirmation and endorsement), but to those who have not given the subject particular study and to those who have treated all their patients medically.

In the persistent study and presentation of this subject my sole object has been to invite earnest dissent, as well as earnest support, to the end that the best and most practical procedure may be adopted, even though it be the exact antithesis of my conclusions. It is the eternal truth toward which I am striving, whether that truth in this instance confirms or disproves.

There are altogether too many patients with amebic dysentery who to-day are no better than they were six months after the onset of the disease. There are patients now in the United States in whom the disease has persisted for six, eight and even ten years. One might say that they could be treated surgically if they wished to be; but has appendicostomy been even offered to them? Has the profession been educated up to the point of offering, or better, of advising operation after a certain lapse of time? Evidently not, if we are to judge from the relative infrequency of the operation, and compare it with the large number of chronic cases.

According to the annual report of the director of health for the Philippine Islands, Victor G. Heiser, Passed Assistant-Surgeon, U. S. Public Health and Marine-Hospital Service, during the year ended June 30, 1907, there were 344 deaths due to amebic dysentery in the city of Manila, as against 288 for the preceding year.

For every death there are about twenty patients who live, which would make a total of nearly seven thousand cases for that year. When we consider that a large proportion of that number return to the United States and are scattered all over this country, it can readily be seen that amebic dysentery becomes a matter of importance to the general practitioner everywhere in this country, and the subject can not be dismissed because primarily a "tropical disease." Progressive practitioners indulging in postgraduate work should take opportunity to familiarize themselves with the *Amœba coli* under the microscope, and then interrogate the stools in "that case of intractable diarrhea."

When a patient presents himself for treatment with a history of "a running off at the bowels," as it is frequently characterized, automatic recourse to bismuth, opium, or similar drugs should not invariably follow. With rest, dieting and slight medication, an acute exacerbation of a chronic amebic dysentery will often yield, so far as the diarrhea is concerned, and one may be misled into thinking that a "slight attack of diarrhea" has been "cured." *There should be more frequent use of the microscope in these cases.* It should also be constantly borne in mind that a patient does not have to go beyond the United States to acquire this disease, as it has been shown by Tuttle that cases have occurred among those who have never been outside of New York.

Futcher[2] reports ninety-five cases of amebic dysentery contracted in Maryland and seventeen in eight other states, which gives an idea how widespread the infection was five years ago.

2. THE JOURNAL A. M. A., Aug. 22, 1903.

Now, whether the disease be considered chronic after a year or after six months, I believe that when it becomes chronic it also becomes surgical.

On the other hand, while it remains acute, it also remains medical, with the single exception of those acute cases which grow steadily worse, even while under treatment. I do not advocate surgical treatment for both acute and chronic cases (with the one exception just stated), but assert that a case ceases to be a medical one as soon as it ceases to be an acute one.

While there may be debatable ground for the adherents of the medical treatment of appendicitis, there remains no tenable ground on which to justify continuation of medical treatment and exclusion of surgical relief in cases of amebic dysentery after they have ceased to be acute. In the latter case, one has everything to gain and nothing to lose. He has already lost all he can spare.

It will be seen, therefore, that all through the consideration of this subject the questions come up: When does a case cease to be acute? When does it become chronic? While that can only be stated approximately, that approximate borderland should be bounded by some definite limits, as: Not earlier than six months or later than one year; or, placing it within narrower margins: Not earlier than nine months or later than one year. Some set of principles should be established on which to govern our practice in these cases. The issue should be squarely met. If some such borderland is not established, procrastination only will result and patients permitted to suffer who could be relieved. It was for that reason that last year I suggested a working basis in these words: "Amebic dysentery, with lesions above the sigmoid, chronic for over one year, resistant to colonic irrigations, then become a surgical disease."

One year was suggested as meeting the demands of conservatism, as I have been actuated by a conservative inclination from the beginning. But if further experiences prove that a year is too long to wait, the proper level will be shown by the gauge of clinical experience.

In the *Military Surgeon* for January, 1908, there appears an article on "Ipecacuanha in Amebic Dysentery" by Surgeon Henry I. Raymond of the United States Army. While the enthusiasm of Raymond as to the permanent value of ipecac in amebic dysentery is shared by but few others, still, for the purpose of this paper, I invite attention to certain points of related interest.

At this point I wish to state that in my opinion there is no known drug which, taken by mouth, can be tolerated in sufficient strength in the upper alimentary passages to secure a destructive or toxic action on amebas in the colon. Quinin has proved to be destructive to the parasites when brought in direct contact with them; ipecac has not. And yet quinin irrigations have failed to cure in many cases, perhaps because the amebas have become encysted, and then imbedded beneath the submucosa, sufficiently remote and fortified to withstand the action of the quinin solution in the lumen of the gut, only to develop marked activity after a lapse of time, during which the patient has considered himself or has been considered as cured. This would account for the fancied disappearance of amebas from the stools in so many cases. Quinin acts on the *Plasmodium malariæ* in the blood, while *Amœbæ coli* are within the lumen of the intestine and are not approachable through the medium of the circulation.

For accurate scientific data of reliable clinical value I believe the stools should be carefully examined microscopically for many months and even years after supposed recoveries. It would be of value, too, if these examinations were made by an impartial observer rather than by the clinician himself.

I know of patients who considered themselves recovered, and were so pronounced by their physicians, who were free from all symptoms for three, four and five years, only to be stricken with severe acute attacks, in the meantime not having been beyond the borders of the United States.

In Case 4 in Raymond's article it will be seen that five months after reported recovery following ipecac treatment the report states that "a few sluggish amebas" were found. To be sure, this patient was in the Philippines at the time, but the time under observation after the treatment was discontinued was only ten months. During that time five microscopic examinations were reported, amebas being present once. The history of this case since November, 1906, would be of decided interest to workers in this field.

Raymond's Case 5 is reported as having been subjected to microscopic examination for only one month after treatment.

While it is not my purpose to belittle the ipecac or any other treatment, the ipecac treatment, by the majority of observers, has been found wanting in amebic dysentery, no matter what it may do in other forms of dysentery. With ipecac or without ipecac, with quinin or without quinin, with argyrol or without argyrol, if *Amœba coli* persist after a year amebic dysentery becomes a surgical disease.

In his well-known work on "Tropical Diseases" Manson says:

> I can offer no explanation of the action of any of these drugs (including ipecac) in dysentery. We use them quite empirically. Ipecacuanha and simaruba really seem to have some sort of specific action on the disease or its cause, but in what way it is impossible to indicate. Strange to say, ipecacuanha, which has been found so serviceable in India, Africa, the Brazils and elsewhere, has a very poor reputation as an antidysenteric in the United States (Osler); it has also signally failed in some English epidemics (Clouston); facts pointing to specific differences in the dysenteries of different countries.

If ipecac is of value even in a limited number of cases, give it a chance. Leave nothing undone in striving to prevent the case becoming chronic; then, having done all, treat it surgically.

To reiterate: Amebic dysentery, in its initial acute manifestations, is a medical disease. When it refuses to yield to medical treatment and becomes chronic, it then becomes a surgical disease, and no patient should be denied the permanent relief which surgical treatment holds out to him.

Anders[3] has said: "I believe that ipecacuanha is the best single remedy for the treatment of this disease, but it is not a specific, and not all patients can take massive doses."

Referring again to the *Military Surgeon* for January, 1908, Assistant Surgeon Robert M. Thornburgh of the United States Army, in an article on "The Treatment of Amebic Dysentery," says:

> From the writer's observations while in charge of the dysentery ward in the Division Hospital, Manila (part of 1905-6), the cases treated solely by ipecac or by ipecac combined with

3. The Journal A. M. A., Aug. 22, 1903.

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quinin enemata, nearly always relapsed when the treatment was discontinued. . . . No internal treatment used by itself was successful in the hands of the writer in any case of these subacute or chronic cases. . . . Quinin sulphate . . . has been extensively employed with some undoubted cures and numerous relapses with fatal termination. . . . Ipecac can be given . . . to lessen the diarrhea. It lessens the number of stools, but *does not kill the ameba.* (Italics mine.)

Thornburgh thinks well of rectal injections of argyrol, although the cases he reports were only under observation nine months. But whatever the results of further study of the effects of argyrol, the *rationale* of my line of treatment would not be modified. The patients relieved by argyrol would not have to be considered from a surgical viewpoint. If future experience results in reducing the number of cases now becoming chronic, so much the better; then there will be fewer surgical cases. That would make a difference in numbers without any difference in the principle for which I contend.

Surgical treatment is not an experiment; it has an established place in the treatment of this disease, and I would gladly extend its benefits by heralding its virtues. In fact, it has been so well thought of that it has been employed in pathologic conditions of the colon other than those caused by the *Amœba coli*, and with marked success.

To give expression to the conclusions of other observers who have treated this disease both medically and surgically, I will quote briefly from an article by Surgeon Holton C. Curl[4] of the United States Navy, entitled "The Surgical Treatment of Dysentery." He says:

The necessity for surgical interference was brought strongly to my attention by observing the number of cases admitted to hospital (Isthmian Canal Hospital, Colon) in fairly good condition, which grew steadily worse in spite of the best medical treatment by careful and experienced men. . . . what I call an "intermediate class" . . . where medical treatment does not check the disease, where the patient loses strength and finally dies, the pathologic condition apparently uninfluenced by medicine or ordinary irrigation. It is in this class, varying as it does between extremes, that I would advise operation, and in most of these cases, it is a *dernier resort*, offering the patient the only chance of recovery.

In a condition where there is nothing to lose and everything to gain, the surgeon is tempted to operate in cases in which he feels that the chances are all against recovery. He realizes, however, that cases of this sort—apparently hopeless—will recover in a most surprising manner, and he undertakes the operation often to the detriment of his percentage of recoveries. I prophesy that the mortality percentage will be high until the medical man (as in appendicitis) learns to send his patients to the surgeon before it is too late. Even more than in appendicitis there is a tendency to procrastinate, to try some new remedy, until, when the patient finally reaches the surgeon, his chances are small.

Recently I received a letter from Dr. Jerome B. Thomas, of Brooklyn, N. Y., from which I shall quote. Thomas spent several years in the Philippines and was the physician in charge of the Government Sanitarium at Benguet. He writes as follows:

I had an experience in treating a case of chronic amebic dysentery soon after my return from the Philippines that has led me to the same conclusion that you have reached. The patient was a personal friend of mine, and we tried diet, internal medication, sanitarium treatment, and all sorts of local treatment for almost a year, when we agreed on appendicostomy as a last resort. Within two or three days after the operation he had made decided improvement, and then his progress was steady and quite rapid. I feel sure that he would have died without the operation.

This is only another of the many examples of how the surgical treatment appeals to the progressive practitioner. It is so essentially practical that it is no wonder that it has been referred to by MacKenzie as "a marvel of ingenuity."

One of Rockey's patients, also a medical man, has said that he would not take $1,000 for the benefit that his appendix has been to him.

While all the literature on the subject is not available at this time, for the consideration of those who have not reached any conclusions in this matter I would mention the names of Weir, Tuttle, Rixford, Nydegger (U. S. P. H. & M.-H. S.), Arthur (U. S. A.), Curl (U. S. N.), MacKenzie, Rockey, Barbat, Willy Meyer, Beck, Elder (of Montreal), and many others who have employed surgical treatment.

In conclusion I would suggest that the *Amœba coli* may not be pathogenic to all men, as it is well known that all individuals equally exposed do not contract the disease. The so-called *Entamœba coli* may be the form of the parasite as observed in the stools of an individual not susceptible to amebic invasion. The so-called *Entamœba dysenteriæ* may be the same parasite developing greater activity coincident with morphologic changes in an individual having a susceptibility to the organism. Have *Entamœbæ dysenteriæ* ever been found in a case presenting no clinical symptoms And have *Entamœbæ coli* ever been found in a person sick with dysentery in whom no *Entamœbæ dysenteriæ* could be demonstrated? This may be a case of a distinction without a difference, a biologic distinction without a clinical difference.

4. The Military Surgeon, October, 1907.

THE PREVALENCE OF HYDROPHOBIA IN THE PHILIPPINE ISLANDS.*

F. W. DUDLEY, M.D.
Attending Surgeon, St. Paul's Hospital.
MANILA, P. I.

Notwithstanding the fact that the organ of the humane societies in the United States has denied the existence of hydrophobia as a distinct disease—and surprising as it may seem, many prominent (?) physicians are quoted in support of the assertion—I shall consider it as such.

While the object of this paper is to show the prevalence of hydrophobia in the Philippines and the necessity of making available modern prophylactic treatment to all needing it, a review of the literature as it stands to-day does not seem out of place.

DEFINITION.

Synonyms are rabies, lyssa, *la rage, Hundswuth, Wasserscheu, Tollwuth.*

Hydrophobia is an acute, specific, infectious malady of the central nervous system, as yet of undetermined origin, principally occurring in carnivora, and to some extent in herbivora, communicated from the lower animals to each other and to man by the bite of an infected animal and productive of symptoms resulting fatally.

*Read at the Fourth Annual Meeting of the Philippine Islands Medical Association, Feb. 28, 1907. Owing to lack of space, this article is here presented in abbreviated form. A reprint, giving the article in full, may be had on application to the author, or will be sent to any address by THE JOURNAL A. M. A., on receipt of a 2-cent stamp.

The saliva was found by Grüner, in 1813, to be the vehicle of infection. In 1823 Magendie proved that the saliva of hydrophobic patients was capable of conveying the disease to dogs, and this was confirmed by Eckel and Renault. The evidence of the communication of the disease from man to man is incomplete, but it should be held that it may be so conveyed.

The specific cause of the disease has not been isolated.

It is customary to restrict the term "hydrophobia" to the disease in man, and rabies to that in animals.

The term "hydrophobia" is, however, not strictly accurate, as there is not necessarily any fear of water during the height of the disease, but only great difficulty in swallowing liquids; the attempts to swallow bring about attacks of convulsions, and not uncommonly the mere sight of water or other substance produces similar attacks.

HISTORY.

Democritus gives a clear description of rabies occurring in animals 500 B. C., and Aristotle, in 322 B. C. states that the human species is exempt from infection by animals. The first description of its occurrence in man did not appear until 200 B. C. Since this time many ancient and modern writers have contributed to the literature on this subject. The best description in modern times appeared in 1850, by Trousseau.

The first record of the appearance of the disease in England is in 1026. In 1768 rabies was alarmingly frequent in Boston and in other towns in North America. In 1779 it appeared in Philadelphia and in Maryland, and in 1785 it was prevalent all over the northern states and spread to the south. In 1860 rabies was again prevalent in America, especially to the west.

The cause of the disease was first clearly discussed by Pasteur in 1882, who devised a plan of rational treatment.

DISTRIBUTION.

Such authorities as Virchow have denied the existence of hydrophobia in Africa, Greenland, Denmark and parts of South America and Asia. He, and many others, asserted that it was peculiar to temperate zones. With a temperature of 25 degrees below zero, an epidemic broke out among animals in Greenland in 1860. In Russia hydrophobia is common and is due largely to the frequency of wolf-bites. It is relatively rare in North Germany, owing to the provision requiring all dogs to be muzzled. It is more common in France. Isolated sporadic cases occur in all countries of Europe, and, from time to time, epidemics varying in severity. It is usual for the malady to remain lurking in certain districts or countries. Thus foci of rabies are common in certain parts of Russia and of France, but rarer in central Europe. In Great Britain more or less extensive epidemics of rabies have occurred at different times. Since 1897, owing to the muzzling order, the disease has greatly diminished. During 1899 no human being died of hydrophobia in England or Wales a result which had not obtained during the previous fifty-one years. For the ten years ending with 1900, Tatham tells us that there was an annual average of 29 deaths from the disease. In the year 1900 11 cases were reported; this outbreak of rabies was confined to a district in the southwest of Wales. No death occurred in England from hydrophobia in 1903. For the period from 1899 to 1904 there were 2 deaths. Rabies is, however, more frequent in Ireland.

Salmon[1] shows that hydrophobia is of more frequent occurrence in the United States than is generally known. In the vital statistics of the census of 1890 the same author records 143 deaths from thirty states. The statement of Boulanger to the effect that no part of the world is free from the disease is probably correct.

That rabies is ever prevalent and widely scattered throughout the Philippine Archipelago is well known to residents of these islands, yet no cases could be found recorded in medical literature as occurring here. The scrawny, half-starved native dog offers little resistance to the inroads of any disease to which he is subject. He is found throughout the islands in great numbers, and his appearance would suggest a cross between a cur and some wild species of canidæ.

During a residence of about eight years in various parts of the islands I have become personally aware that rabies is a prevalent disease among native dogs, that people are frequently bitten by these animals, and that hydrophobia in man is not a rare result of such bites. I have a personal knowledge of 13 persons dying of the disease and 19 others who were bitten but did not develop the disease so far as could be learned. One of these patients applied to me for treatment at St. Paul's Hospital in March, 1906, four days after being bitten, suffering from a wound about the face. The patient developed hydrophobia sixty-seven days after being bitten, as near as could be learned, and died of the disease in five days after the first symptoms appeared. During the months of January and February, 1907, 6 persons were seen who were bitten by dogs said to have been mad.

During February, this year, the body of a dog which had bitten two persons, and was supposed to have been rabid, was brought to the government laboratory for examination. Dr. Strong states that no characteristic changes or Negri bodies were found in the central nervous system, and that rabbits inoculated had not developed any symptoms of rabies, February 27, 1907, nineteen days after inoculation.[2]

It is common in pueblos and barrios to see natives chasing mad dogs (*manga asong olol*, or *perros rabiosos*, as they are called in Tagalog and Spanish respectively) with long bamboo poles. The animals are killed in this way.

Dr. M. Murciano, Tarlac, Tarlac Province, Philippine Islands, in a letter to me, states it as his belief that rabies and hydrophobia are much more common in the islands than is generally known, and says: "The natives have great dread for rabid dogs and medical aid is seldom sought in the outlying districts, for they have come to know that hydrophobia, like the bite of the camamalú, a native snake, is certain death. For this reason but a very small portion of the cases become known to the health authorities." He continues: "Five of my own deer dogs and 14 dogs belonging to others have become affected with rabies, from my own personal knowledge, since 1900, and were killed by my direction."

Dr. Murciano has resided in the islands twenty-two years, was, under the Spanish Government, medico titular, Tarlac Province, is a close observer, a great deer-hunter and dog-fancier. Dr. Murciano's dogs are valuable, imported animals, and it is quite certain he would not have slain them unless he was convinced that they were affected with rabies.

1. U. S. Dept. Agric., Year-Book, 1901.
2. Since this paper was written, cases of rabies in dogs have been confirmed by pathologic examination.

According to native tradition, the islands were once free from this dread malady, and the infection was brought to these shores by seaweed, wreckage, etc.

With a view to collecting statistics on the prevalence of the disease, access was had to the records of the insular Board of Health and a circular letter was sent to every practicing physician in the Philippine Islands, including the army surgeons, early in February, 1907, enclosing a post-card for reply. These letters amounted to 521 in all, and 140 replies were received. From the records of the Board of Health,[3] for the years from Sept. 1, 1903, to June 30, 1906, in Manila, 2 deaths; 1904, 45 deaths in sixteen provinces, and for the year 1905, 44 deaths occurring in twenty-six provinces, making a total of 91 deaths from hydrophobia obtained from this source.

From the personal replies of physicians to circulars mailed (in addition to those reported to the Board of Health), 54 cases were gathered, which, with 13 deaths from my personal records, make a total of 158 deaths in human beings. Strange as it may seem, in reply to circulars sent out, but 17 persons bitten by dogs are reported in whom the disease did not develop. These, together with my 19 cases, make a total of 36 cases in which no symptoms of the disease were noted following the bite, so far as traced. This shows that the disease developed in only 1.16 per cent. of the total number of persons bitten. Of course, it is not known what percentage of the dogs inflicting these bites were actually rabid. The Board of Health only reports cases of deaths from the disease. As stated elsewhere, it is unusual for persons bitten to seek medical treatment, and few of those who develop the disease do so. My cases cover a period of from Oct. 1, 1902, to date. The cases reported by physicians in reply to the circulars mailed embrace the period from 1883 to Feb. 28, 1907, but only 7 cases were reported prior to October, 1902. Generally speaking, therefore, the cases reported in this paper may be considered as having occurred between Oct. 1, 1902, and Feb. 28, 1907.

Cases of rabies were reported as occurring in 253 dogs 3 cats, 1 carabao, 1 cow, 4 horses, 2 pigs, 3 rats and 1 monkey.

Of the thirty-nine provinces, the Island of Mindanao (Moro Province) and the district of Manila, in the Philippine Islands, twenty-three were shown to have been infected by the disease, as follows:

Ambos Camarines, Bataan, Bulacan, Cagayan, Cebu, Ilocos Sur, Masbate, Misamis, Pampanga, Pangasinan, Union, Samar, Nueva Ecija, Negros Occidental, Sorsogon, Tarlac, Tayabas, Albay, Capiz, Cavite, Iloilo, Manila, Rizal, Batangas and Bohol.

Thus, it will be seen, sixteen provinces escaped the disease, according to reports.

Since I mailed the circular letters requesting information regarding the prevalence of the disease I have received several telegrams from physicians addressed, inquiring if virus for protective inoculation was available in Manila, and requesting to be supplied, stating that they had patients under treatment who were bitten by rabid animals.

ETIOLOGY.

The idea that hydrophobia is less prevalent in winter than in summer is not correct. Suzor reports twice as many cases in March, April and May as in the summer months. Salmon, in a total of 14,000 cases, found June to be the highest month, and, though there were more cases reported from April to September, yet the difference is not sufficient to be of etiologic importance.

About two-fifths of all cases in man are in patients under fifteen years. More men and children than women are affected, owing to the mode of life and nature of the clothing worn protecting the latter.

The disease is never spontaneous, but is usually communicated through the bite of a rabid animal and the consequent inoculation with the virus that is present in the saliva. All domestic mammalia are susceptible to rabies, although, from the habits of the animals, the disease is most likely to occur in dogs and cats. Birds are more refractory than mammals, especially to bites, but they can contract the disease through inoculation. In the great majority of cases the disease is communicated to men by the bites of rabid dogs, occasionally of cats, and in rare instances wolves and foxes. Goats, hyenas and jackals are said to suffer at times. In 1888 a number of deer from the royal herd in Richmond Park, near London, suffered from the disease and were studied at the Brown Institution. Rodents may suffer from the malady. Dr. M. Murciano, Philippine Islands, reports a case in a carabao (water buffalo) acquired from the bite of a rabid dog. Hydrophobia sometimes occurs in the cow, and is communicated by inoculation to the rabbit, horse and pig. In the western part of the United States the skunk (mephitis mephitica) is said to be very liable to the disease. A species of the skunk is found in the Philippines. One was recently killed in the grounds of a private residence in Manila. Persons sleeping in the open air, or tents which the animal can enter, are liable to be bitten. All are capable of communicating the malady to man. Although the cause of the disease has not been determined with certainty, it is known that the virus has a special affinity for the nervous system and is found in the saliva but not in the urine or blood.

Bertarelli has shown that the virus reaches the dog's salivary glands by way of the nerves and not through the blood vessels. Pasteur has found the poison abundantly present in the nerve centers, and has transferred the disease by taking bits of brain substance or medulla, derived from an infected animal, and inoculating them into healthy subjects.

The disease can be passed from animal to animal, from an animal to man, and from man to an animal, and it can be passed on from one to the other without rapidly losing its virulence. The transfer is usually made through some solution of continuity, commonly a bite, but it has occurred through a pimple, a very slight abrasion of the skin, by the animal licking the part, and it is said to have been transferred by the milk of a nursing mother.

Absorption of virus has taken place through healthy unabraded mucous membrane—nose and eye. It may be conveyed from the mother to the fetus.

Infection from bites on the back is slowest, owing, no doubt, to the clothing and the skin being thick and nerves few. With a thorough cleansing of the bite in this location and cauterization the person is more likely to escape the disease.

The virus of rabies is especially abundant in saliva and in the nervous system, both central and peripheral. There is some discrepancy among the testimony of ob-

3. Reports of the Bureau of Health for the Philippine Islands are not completed for 1906; completed reports from seven provinces show twelve deaths from hydfophobia. These deaths should be added to the statistics presented in the foregoing.

servers as to whether the virus is present before the symptoms of the malady are well established. According to Nocard and Roux, the saliva of the dog may be virulent three days before the onset of the symptoms; according to Dowdeswell, the central nervous system is not virulent until the animal shows symptoms of the malady. All parts of the nervous system are virulent at the time of death, but in the earlier stages of the disease both bulb and cerebrospinal fluid are virulent. The blood, the lymph, the muscles, the liver and such secretions as the urine and seminal fluid are usually stated not to contain the virus. On the other hand, such glands as the salivary, the lachrymal, and the pancreas contain the virus, and it has also been found occasionally in the milk.

It is possible that the disease can be acquired by absorption through the gastrointestinal tract. Some animals, fed on carcases of animals dead of rabies, have died, while others have been unaffected. It is probable that an abrasion of the gastrointestinal tract is necessary for infection.

It has been asserted that the disease may arise from the bite of a healthy dog, but this is not the case. The mistake has arisen from the fact that a dog may communicate the disease while suffering from the initial manifestations of the illness, and before the characteristic symptoms have developed.

A case is on record in which a man contracted the disease by unloosening with his teeth a knot in a rope with which a mad dog had been tied. Dried saliva of a rabid animal retains its virulency for some days.

Cases are on record of hydrophobia having been acquired through a wound received during postmortem dissection of a rabid animal.

The virus is destroyed when exposed to a temperature of 50 C. for one hour and 60 C. for half an hour. Five per cent. solution carbolic acid, 1 to 1000 solution of bichlorid of mercury, acetic acid and permanganate of potash destroys the virus in the same length of time.

The most remarkable fact about the virus of rabies is the power that it possesses of increasing in the nervous system. In this respect it is unlike snake-bite, after which symptoms come on in excessive rapidity. It is found in the peripheral nerves and may be present in the suprarenal bodies. There is some evidence to show that the virus inoculated by bite reaches the central nervous system through the nerves, and for this reason lacerated wounds involving nerves are more likely to be followed by the disease. It is possible that the virus may be conveyed from the peripheral nerves to the central nervous system through the lymphatics.

Wounds about the face and head are especially dangerous; next in order in degree of mortality come bites on the hands, then injuries on the other parts of the body. The relative order is, no doubt, greatly dependent on the fact that the face, head and hands are usually naked, while other parts are clothed. It would also appear that the mortality depends, to some extent, on the richness in nerves of the part injured. Punctured wounds are said to be most dangerous, and lacerations are fatal in proportion to the extent of the surface afforded for the absorption of the virus.

The disease exhibits some resemblance to tetanus, in which it has been shown that the principal phenomena of the malady are produced by the toxic substances elaborated by the specific bacillus.

The bite of the wolf is said to be most dangerous, and the following in diminished severity in the order named: cat, dog and other animals.

Woodhead states that only 16 per cent. of those bitten by rabid animals become victims of the disease, while other authorities state that when no preventive measures are adopted, half or even two-thirds of those bitten escape. There is great difficulty in determining this question with accuracy, owing to the difficulty of obtaining evidence that the dog or other animal reported to be rabid was really so.

Horsley says that more than 15 per cent. of persons bitten by dogs become mad. The mortality of those bitten by wolves is not less than 40 per cent. According to Babes, the mortality of the latter is from 60 to 80 per cent. The reason for the wolf-bite being so dangerous is its severe lacerated nature. The bites from cats are more dangerous than those from dogs owing to the tendency of the cat to "fly" at and bite exposed surfaces, such as the face and hands.

The disease is usually communicated by a rabid animal wandering at large, often over great distances, and biting other animals, such as dogs, cats, horses and cattle.

FREQUENCY.

Rabies is not a common malady in animals, and hydrophobia is rare, comparatively speaking, in man. Sporadic cases are met with in animals in every large city during the year.

PATHOLOGY AND MORBID ANATOMY.

The pharynx, mouth, fauces and esophagus may be injected and the latter very edematous. The tongue is often swollen and of a dark red color and vesicular papules are noted on its under surface about the opening of the salivary glands. Pulmonary congestion is frequently seen, the mucous membrane showing points of hemorrhage. The stomach and intestines are congested and may present hemorrhagic erosions or even ulcers. The stomach and intestines usually contain no food, but, in animals, may contain numerous foreign bodies, such as rags, manure, pieces of wood, straw, stones, coals, hair, hay, etc. The spleen is congested and lungs engorged with blood and there are numerous petechial hemorrhages on the surfaces of the serous membranes.

Rabies can never be excluded by necropsy, as the animal may have been killed, and frequently is, on suspicion of having the disease, and at such an early stage that none of the postmortem phenomena of rabies are present.

In the dog the teeth are often broken and the tongue and buccal mucous membrane lacerated.

The most characteristic naked-eye pictures in postmortem examination are congestion of the fauces, larynx, trachea and stomach and fluidity of the blood. There are signs of congestion of the salivary glands. In some cases congestion of the central nervous system, more especially of the medulla, is visible to the naked eye.

The brain, medulla and spinal cord show small hemorrhages and large numbers of small round cells in the perivascular lymph spaces and around the motor ganglia cells, and progressive degeneration in the spinal nerve cells appear, consisting in chromatolysis and overgrowth of the nucleolus. There may be congestion of the peripheral nerves and sympathetic, and degeneration of the nerve-sheath and enlargement of the axis-cylinder.

Fitz has observed blood extravasation into the perivascular spaces of the brain. Soft thrombi occasionally

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fill the cerebral vessels, being most marked in the veins. The clots lack firmness and are of a dark color.

Changes in the nervous system have been carefully studied by Kolesnikoff, Balzer, Schaffer and Benedikt. The *tubercles rabiques* were later described by Babes and consist of pericellular accumulations of embryonal cells which finally take the place of the destroyed cell. The atrophy, inversion and destruction of the cerebrospinal, sympathetic, peripheral ganglia and plexiform ganglia of the pneumogastric nerve have later been described by Nelis and Van Gehuchten; they consider these changes diagnostic of rabies. These changes are brought about by new-formed cells derived from the capsule, which appear between the cell body and its endothelial capsule. These new-formed cells increase in number, invade the protoplasm of the nerve cell, and finally completely occupy the entire capsule.

Clifford Allbutt and Gowers have described an accumulation of leucocytes around the vessels and an infiltration of the adjacent tissue of the bulb with similar cells. Gowers says that the changes are most intense in the hypoglossal, glossopharyngeal and vagal nuclei.

McCarthy and Ravenel have studied twenty-eight cases of rabies occurring in dogs, rabbits and other animals, and found these changes in all but one case. The plexiform ganglia were affected in all the cases in which positive results as to the presence of rabies were obtained. In twenty-one cases the bulb was examined for the tubercle of Babes and positive results obtained in nineteen. Gordon concludes that the presence of mast cells corroborates his view that the spinal ganglions are the places of predilection for rabic virus.

In rare instances there may be a cloudy swelling of the kidneys.

BACTERIOLOGY.

The micro-organism of the disease has not yet been determined, though there is little doubt but that it is some form of organism capable of multiplying in the tissues and producing a toxic substance. It is possible that the bodies discovered by Negri constitute the virus. They are irregular in shape, usually varying from four to ten microns in size, appear in the central nervous system and are probably protozoa. Rivalta, Ferran, Foll, Spenelli and others have described a bacillus. Memo thinks that he has proved it to be the specific organism and says that he has been successful in producing the disease in rodents, dogs, and birds with the typical differences characteristic of each.

Bertarelli states that in more than a thousand tests the Negri bodies were never found in animals free from rabies; they were always found in infected animals with three exceptions. Their chosen site is the hippocampus major. These bodies are also found in the Purkinje cells in the cerebellum. These findings are confirmed by Poor. Bongiovanni, in researches on animals infected with street virus, constantly found Negri endocellular bodies, but these bodies were not found in rabbits infected with fixed virus. Materozzi, of the Catania Institute of Experimental Hygiene, and Bonne, of the Berlin Institute for Infectious Diseases, have also found these bodies constantly, but the latter does not believe them to be of a parasitic nature. They are found in the pyramidal cells of the cortex, cells of the pons, Gasserian ganglia, spinal ganglia and spinal cord; also in the protoplasm and occasionally in the processes of nerve cells. They have not been seen in the nucleus, but are frequently in immediate contact with it.

CLINICAL HISTORY.

The average period of incubation in the Philippine Islands would seem rather long, based on reports received. One authentic case has been reported with an incubation of ten days, and several other unsubstantiated cases of less time, but the latter have been excluded. The three longest authentic periods of incubation reported were eight, nine and ten months.

DIAGNOSIS.

Space will not permit a discussion of this subject. The following points should, however, be borne in mind:

Occasionally a neurotic or hysterical person, after being bitten by a dog or even after reading or hearing a description of hydrophobia, develops symptoms which resemble it. Burr reports an interesting case of the kind from Osler's clinic. The characteristic symptoms may be present, but they are comparatively mild and the affection does not develop. It should be remembered that pseudohydrophobia or lyssophobia, as the state is called, often develops as early as twenty-four or forty-eight hours after the exposure, and may not develop until a few months or even later; whereas true hydrophobia rarely develops in less than fourteen days. It usually runs a longer course than the true disease and recovery is the rule. He is apt to show a disposition to bite, which is very rare in true hydrophobia, and if he barks, growls or snaps, it is an imitation and not the true disease. Threats, inhalations of amyl nitrate and powerful electrical currents speedily cure the ailment.

Dr. A. T. Short, surgeon of the Coast and Geodetic Survey boat *Marinduque*, in replying to my circular from Ormoc, Leyte, Philippine Islands, reports a case of lyssophobia which occurred in Libmanan, Camarines Sur, P. I., in 1901, while Dr. Short was stationed there in the military service. In a house adjoining the military hospital there occurred a case of hydrophobia, the patient dying. In the same house lived a lad of eighteen years, who had been bitten by a dog two years previously. He developed the usual symptoms of pseudohydrophobia, owing, no doubt, to fright, and recovered.

Tetanus is differentiated from true hydrophobia by the presence of marked lockjaw in the former disease, and by the fact that in tetanus there is no dribbling of saliva and no expression of terror. The convulsions of tetanus are more tonic than in hydrophobia.

Landry's paralysis may require exclusion in the diagnosis of the paralytic form of hydrophobia.

DIAGNOSIS OF THE DISEASE IN DOGS.

The great disadvantage of the experimental method of diagnosis is the fact that, on an average, some three weeks are necessary in order to determine with certainty the presence or absence of rabies.

It is, therefore, of the utmost importance that the public should be taught not to kill rabid animals which have bitten human beings, as is now the custom in the Philippine Islands, and other places for that matter, but to isolate the animal and study his symptoms with the object of determining the treatment of the injured person. After the clinical diagnosis has been made the affected animal should be killed, and the clinical diagnosis confirmed by at once removing the brain and cord for examination for the presence of certain well-known changes in the nervous system, described in the foregoing under "Pathology and Morbid Anatomy," as well as for Negri bodies. The finding of the characteristic

changes of the nervous system, Babes tubercles, etc., together with the Negri bodies, is considered sufficiently conclusive to warrant the institution of the Pasteur treatment at the earliest possible moment.

Mills has said that, however suggestive the symptoms following a dog-bite, the given case can not be assumed to be a case of hydrophobia until other possibilities are excluded.

PROGNOSIS.

No case of recovery from true hydrophobia, allowed to develop in man, is on record in which there was undisputed evidence that the diagnosis was correct. Reported cases of alleged recovery from this disease may have been of the hysterical form.

TREATMENT (HISTORICAL).

Thorp states that the powdered seeds of a species of strychnos, probably *Strychnos nux vomica*, have for several hundred years been used in China as a remedy for hydrophobia—probably on the principle of "similia similibus curantur." The dose, expressed in terms of the alkaloid, would be from 0.002 grams to 0.0036 grams.

There are many curious remedies used by the natives of the Philippine Islands, one of which is to burn the hair of the rabid animal inflicting the bite and apply the ashes to the wound. The brain is then incinerated and its ashes applied in like manner.

PROPHYLAXIS.

The treatment of hydrophobia is entirely in the line of preventive medicine, for once the disease is developed curative measures are not possible. By muzzling dogs, as is done in parts of Germany and England, the disease can be practically eradicated.

The local treatment of the bite is of great importance and should be instituted at once after its infliction.

1. A tourniquet should be applied if the bite be on an extremity.

2. The limb should be thoroughly scrubbed about the wound with green soap or other soap.

3. The wounded part should be excised as in tetanus, if it can be done without injuring important structures or causing great mutilation. If the wound can not be excised—only anatomic reasons, and not fears of scars, etc., should deter us from this measure—and is a punctured wound, it should be converted into an open wound by free incision.

4. The wound should be scrubbed again with green soap or other soap and then with bichlorid of mercury, 1 to 1000.

5. Pure carbolic acid and then fuming nitric acid should be applied. If these remedies are not at hand, other strong acid, and the actual cautery may be used, but nitric acid is preferable to the actual cautery.

6. The wound should be left open and packed lightly with gauze moistened in bichlorid of mercury 1 to 1000 and wet dressing of bichlorid of mercury 1 to 1000 applied for twelve hours, and then dry aseptic dressing, which usually does not require to be molested until the wound is healed, unless the nature of the wound has required extensive excision, when it must require time to heal by granulation, and may require several dressings.

Cocain may be used hypodermically, if necessary, for excision or incision of the wound, and may be applied to the wound surface before cauterization.

The bite should never be sucked for fear that the one who sucks it may absorb the poison through an abrasion, and then, too, we must remember that the virus can be absorbed through the healthy mucous membranes.

If Bier's cups are at hand, suction may be thus artificially applied before and after the wound is incised or excised. If the bite be on an extremity, the Bier hyperemic treatment with the elastic bandage might also be tried.

It may be contended that the above treatment is unnecessarily severe and that after excision mild antiseptics alone are required, but when we consider the possibility of infection from the contact with the excised portion, that the disease is sure death, and that this treatment, if applied at once, offers a fairly good chance of recovery, it is believed that one is warranted in carrying it out, and that any sane patient will submit to it when the matter is properly put before him. It is unnecessary to keep a wound so treated open five or six weeks. It should be treated like any other open wound—packed and allowed to heal from the bottom. I have treated about twenty cases in this way and have had only one death, that in the case of a boy who applied for treatment several days after being bitten. How many of these patients were bitten by rabid animals is, of course, unknown.

Some may contend that the tourniquet is unnecessary, as the virus is transmitted by the nervous tissue alone. Blood inoculations in large amounts have caused the disease; therefore, in the present knowledge of the disease, it is well to apply the tourniquet.

Ballinger states, from statistics collected, that of all persons bitten, 47 per cent. suffer and die from hydrophobia. When wounds have not been treated, 83 per cent. succumb. When cauterized—some patients not very promptly—33 per cent. die.

PREVENTIVE INOCULATION.

Where there is any reason to believe a person has been bitten by a mad dog, the preventive inoculation treatment of Pasteur should be administered as soon as possible.

Warren described the "protective inoculation" as follows: "The patients are first inoculated with a cord fourteen days old, and the inoculation is repeated daily for nine days, each time with a cord one day fresher. In winter the oldest cords used are five days old, and in summer, cords that have been drying for four days are also employed."

The treatment is absolutely harmless, if properly employed, and is almost universally attested. Pottevin states that 17,395 cases were treated at the Pasteur Institute, Paris, between 1886 and 1895, and there were but 139 deaths. If the average mortality from inoculation is placed as low as 20, instead of 139 deaths, there would have been approximately 3,476 deaths.

Since the commencement of the Pasteur preventive treatment about 55,000 persons have been inoculated, with an average mortality of 0.77 per cent (Ravenel).

In the New York Pasteur Institute, 313 West Twenty-third street, under the directorship of Paul Gibier, of 1,367 cases treated during the decade ending Jan. 1, 1900, 19 patients died, a mortality of 0.66 per cent. The patients should be sent to the Pasteur Institute at once, since delay tends to diminish the protective power of the treatment. It is, of course, useless after the malady is well developed.

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ANTIRABIC SERUM.

Under this heading in *Progressive Medicine* for December, 1905, is the following statement:

In spite of the fact that hydrophobia has been known to be a preventable disease for many years, the belief in the necessity of having the prophylactic treatment carried out at an institute, often situated at a great distance from the patient's home, and not infrequently entailing great expense, has in many instances prevented the employment of this procedure. That this is not necessary is shown by two cases reported by M. Solis-Cohen, who carried out successfully the treatment in the patients' homes.

The Pasteur Institute of the Department of Health in New York will arrange for a course of treatment for the individual case on receipt of the following data:

1. Name and age of the patient.

2. Location of bite, with its treatment.

3. Any information bearing on the diagnosis of the animal inflicting the bite.

The institute also requires a brief report on the patient's condition two weeks after the end of treatment. If no symptoms have developed two weeks after the cessation of all treatment, the patient is considered out of danger. Anguy, in discussing Cohen's paper, stated that he had also administered the Pasteur treatment in a patient's home.

Section 546 of the Laws of Georgia, 1906, empowers and directs the State Board of Health, as soon as practicable, to arrange for the preparation and manufacture in its laboratory in the capital, material necessary for the treatment and prevention of hydrophobia according to the method of Pasteur, and to keep constantly on hand the necessary material, sufficient in quantity, to meet the requirements that any exigency may demand, and to distribute the same free of cost to physicians and surgeons over the state for the treatment of such of their patients as have been bitten by animals suffering with rabies.

The injection of diluted virus prepared from the bulb into the veins is stated to confer immunity on the horse, but does not do so in the case of dogs and rabbits.

CONCLUSIONS.

1. It is thought that it has been conclusively proved that hydrophobia is sufficiently prevalent in the Philippine Islands to warrant the government in providing the necessary means for placing the Pasteur treatment within the reach of all by making the virus available in the larger centers in the islands.

2. The virus should be furnished, free of cost, to all physicians having persons under their care who have been bitten by rabid animals.

3. The government laboratories could prepare and distribute the virus.

4. When the Pasteur treatment has been made available popular instruction regarding the disease in animals, its transmission to man, the immediate treatment of the wound, the necessity of making a diagnosis, and what should be done to enable the health authorities to do so, should be undertaken by the insular board of health and through the public schools.

5. When it is known by the inhabitants that a safe, and, to a considerable extent, a sure cure for the disease is available, there will be a great increase in the number of cases reported.

6. Undoubtedly, in time to come, the government of the Philippine Islands will make available to all the modern prophylactic treatment of the disease through the government laboratories, and if the statistics here presented succeed to any extent in shortening that time I shall feel well paid for my trouble in collecting the cases presented in this paper.

In this excerpt space will not permit of a detailed description of the Negri bodies or of the technic usually employed for demonstrating them. For like reason remarks on the clinical history of the disease in man and animals, and on diagnosis, are omitted. Little that is new could be said under these headings.

I gratefully acknowledge cases reported by the following: A. Anguita, S. Suzuki, Diaz Perez, Ramon Lopez, Fernando Calderon, D. del Val, M. Garcia del Rey, S. Diaz Perez, Manuel Gomez, R. E. L. Newberne and Francisco Castaneda, Manila; Simeon Carlos, Roberto Toledo, C. Pineda, Andres L. Luciano, E. Santos, Pedro Joven and Antonio Alvendia, Pampanga Province; Tranquilino Gonzalez, Iloilo; J. Victoriano y Kosca, Matias Aznar and V. Solis, Cavite; Jose Mascunana, A. Ubalde, Tayabas; Octavio Amado, W. A. Wickline, Rizal; Trinidad Moreno, Batan; Ramon L. Lopez, Pio Valenzuela, Bulacan; M. Murciano, Tarlac; Lope de la Rama, Negros Occidental; A. S. Short, Coast and Geodetic Survey boat *Marinduque*.

A COMPARISON OF ALCOHOLIC AND WATERY EXTRACTS IN THE SERUM DIAGNOSIS OF SYPHILIS.*

JOHN W. MARCHILDON, B.S., M.D.
Instructor in Pathology in the Medical Department of St. Louis University.
ST. LOUIS.

A new phase in serum diagnosis was introduced by the determination that syphilitic antigen is soluble in alcohol and that such alcoholic extracts could be used in the same manner as physiologic salt solution extracts in the serum diagnosis of syphilis. This discovery was thought at first to be only of theoretical value[1] in throwing light on the nature of the chemical substances concerned in the binding of complement, since it showed by the solubility of these substances in alcohol that they were fat-like substances or lipoids.

Since the use of other substances like lecithin, sodium oleate, etc., as antigen might, through failures, reflect on the practical value of the reaction for the serum diagnosis of syphilis, Wassermann[2] insisted that the results of his reaction could be relied on only when extracts made with physiologic salt solution were used.

The variability of these extracts even when kept on ice, the possibility of their failure to bind complement with luetic sera from day to day, makes their use unsatisfactory and laborious.

The advantages to be derived from the use of alcoholic extracts are many. They are more easily made than watery extracts, since they do not need to be put in a shaking machine for so long a time. They do not require so much time to sediment and they clarify better. The upper clear portion alone is used so it is never necessary to centrifuge them. They may be kept at room temperature and in general retain their power for a longer time.

The following represents an attempt to learn whether the results obtained from the use of alcoholic extracts

* From the Laboratory of the First Medical Clinic of the University of Berlin, Geheimrat His, Director.

1. Landsteiner, Müller and Pötzl: Wien. klin. Wchnschr., 1907, No. 50.

2. Internat. Cong. for Int. Med., Vienna, 1908; München. med. Wchnschr., 1908, No. 17, p. 928.

are equal to or possibly better than those of physiologic salt solution extracts. The question for discussion may be separated into three parts:

1. Will a serum react positively with a physiologic salt solution extract and negatively with an alcoholic extract, and vice versa?

2. Do non-syphilitic sera react positively?

3. If so, will the same parallel be established when alcoholic extracts are used?

The proper answering of these questions has an important bearing on the practical value of the reaction for the serum diagnosis of syphilis and necessitates, of course, the application of the test to as large a number of sera as possible.

Physiologic salt solution extracts of syphilitic liver and alcoholic extracts of syphilitic liver and normal human heart muscle were used throughout these reactions.

The serviceability of the extracts was tested first. An extract, in order to be serviceable, must in proper dosage react positively with a certain number of sera coming from genuine syphilitic patients with manifestations, and it must react negatively with a certain number of sera from non-syphilitic individuals. A further demand is that it must not of itself alone bind complement.

In the examination of each unknown serum for diagnosis controls are needed. The purpose of these controls is to compare the reaction of the unknown serum for diagnosis with that of known positive and negative sera and to show that the extracts do not alone bind complement. These controls are to be made in every reaction in order to show whether any change has taken place in the extracts from day to day, as sometimes occurs. Every serum was tested with the three kinds of extracts explained above.

1. In more than 150 serum examinations carried out in this manner the results have always been parallel. When a serum reacted positively with a physiologic salt solution extract it invariably reacted positively with the alcoholic extracts and vice versa. Not only were the reactions of alcoholic and watery extracts parallel when fresh sera were used, but also in the case of old sera which were formerly positive and later sometimes react negatively, as noted by Fleischmann and Michaelis as well as by others.[3] In a word, in no case was a serum positive with one serviceable extract and negative with another.

2. To answer the second question, as to whether any non-syphilitic serum would react positively, demands a consideration of the cases from which the sera were obtained.

For this work the blood was taken from two sources — from patients and from autopsies. L. Pick and A. Proskauer[4] have pointed out that blood serum obtained at autopsy is of equal value with normal blood in the serum diagnosis of syphilis. To this end I obtained blood from seventy-five autopsies from the pathologic department of the Krankenhaus Friedrichheim of Berlin.[5]

A consideration of the cases submitted for examination permits the following subdivisions:

I. CASES WITH A HISTORY OF SYPHILIS OR HAVING A STRONG SUSPICION OF SYPHILIS, AND GIVING A POSITIVE SERUM REACTION.

1. Cases of severe arteriosclerosis and heart insufficiency	4
2. Cases of tabes and paralysis	8
3. Cases of hydrocephalus and meningitis	3
4. Cases of aneurism	5
5. Cases of syphilis, with history of infection, symptoms present	9
6. Cases of syphilis, with history of infection, no symptoms	4
7. Cases of nose and throat diseases of a specific nature	8
8. Eye cases of specific character	2
9. Suspicious cases, gynecologic	3
10. Cases with obscure symptoms and findings belonging to internal medicine	6
Total	52

In each of these cases giving a positive serum reaction the clinician or the pathologist either found signs of actual syphilitic disease or was led to believe that the present trouble was due to syphilis.

II. CASES WITH NO HISTORY OF SYPHILIS AND NO SUSPICION OF LUETIC INFECTION, AND GIVING A NEGATIVE SERUM REACTION.

1. Cases of tuberculosis	21
2. Cases of sepsis and septic infections	17
3. Tumors	12
4. Cases of arteriosclerosis, nephritis and heart lesions	13
5. Cases of scarlet fever	3
6. Cases of delirium tremens	2
7. Cases of rachitis	2
8. Case of echinococcus cyst	1
9. Case of Hodgkins' disease	1
10. Case of pernicious anemia	1
11. Case of whooping cough	1
12. Cases of typhoid fever	2
13. Case of insanity	1
14. Cases of nose and throat diseases	14
15. Cases of eye diseases	6
16. Cases belonging to internal medicine	3
17. Healthy children	2
Total	104

It is important to note that sera obtained from patients with tuberculosis of the lungs, with carcinoma, and with sepsis, for the largest part, gave negative reactions. The few exceptions will be explained later; the findings agree largely with the findings of Elias, Neubauer, Porges and Salomon,[6] who report weak reactions in these diseases. In this connection it is of interest to refer to a specimen of blood serum obtained from a case of tuberculosis in the wards. A serum taken from a young woman who had had several operations for bone tuberculosis of an atypical character gave a positive result. Later the clinical diagnosis of syphilis confirmed this finding. All the other cases of tuberculosis, on the contrary, proved negative.

III. CASES WITH A POSITIVE HISTORY OF SYPHILIS AND GIVING A NEGATIVE SERUM REACTION.

1. Cases of syphilis having been treated	4

Fleischmann and Butler[7] and others have already emphasized the fact that syphilitic patients under treatment frequently react negatively.

IV. CASES WITH NO HISTORY OR SUSPICION OF SYPHILIS AND GIVING A POSITIVE SERUM REACTION.

1. Total number of cases examined with no history or suspicion of syphilis	107
2. Cases giving a positive reaction	4

The four cases giving a positive reaction are as follows:

1. Carcinoma of kidney	1
2. Appendicitis and sepsis	1
3. Typhoid fever	2

The first case was one of a very large carcinoma of the kidney with metastases, at autopsy. The patient was a woman of 40 years who had been a prostitute. No history or signs of syphilis, however, could be obtained.

There were thirteen cases of carcinoma examined, of which one gave a positive serum reaction.

3. Dermat. Centralbl., 1908, No. 8; Berl. klin. Wchnschr., 1907, No. 38.

4. Med. Klin., 1908, No. 15.

5. This courtesy was extended to me by Dr. Ludwig Pick, pathologist to the institution.

6. Wien. klin. Wchnschr., 1908, No. 18.

7. Fleischmann, Paul, and Butler, William J.: Serum Diagnosis of Syphilis, THE JOURNAL A. M. A., Sept. 14, 1907, xlix, 934.

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Specific infection could not be accounted for in the case of appendicitis which went to autopsy from perforation of the appendix and peritonitis. The patient was a young man, married, with two healthy children Eighteen cases of appendicitis and sepsis were examined in all, and only the one mentioned above gave a positive serum reaction.

The two cases of typhoid fever went to autopsy the same day and showed extensive lesions of typhoid and septic infection. Syphilitic infection could be practically excluded. Typhoid cases examined in the wards for control gave negative serum reactions.

The present work shows, as has already been noted by Weil and Braun,[8] that a positive Wassermann reaction may be given not only in syphilis but also in other conditions, such as typhoid fever, carcinoma and septic infections. In these cases in which a positive serum reaction was obtained, as these authors have described, and in my own cases, the pathologic processes, such as multiple metastases in carcinoma, and the last stages of sepsis in typhoid and appendicitis, were very far advanced.

Moreover, in these cases with no suspicion of syphilitic infection a positive reaction was given not only by the physiologic salt solution but also by the alcoholic extracts.

CONCLUSIONS.

1. Alcoholic extracts may be safely used in the reaction for the serum diagnosis of syphilis, because they in no way differ from watery extracts.

2. There are some non-syphilitic blood sera which give a positive Wassermann reaction. These sera, however, are so rarely met, and then only in such extensive pathologic processes, that they do not vitiate the clinical value of the reaction.

I extend my hearty thanks to Dr. Paul Fleischmann, clinical assistant in the First Medical Clinic of the University of Berlin, Geheimrat His, director, for the assistance and direction of this work.

3904 Laclede Avenue.

THE QUARANTINE OF SMALLPOX.*

H. M. BRACKEN, M.D.
Secretary and Executive Officer, Minnesota State Board of Health.
MINNEAPOLIS.

While all intelligent and unprejudiced thinkers who have had any experience in dealing with smallpox recognize the protective value of vaccination, the general tendency is to insist on quarantine as an additional safeguard against this disease. It is for us to consider:

1. What does quarantine accomplish?

2. Is it necessary?

Quarantine is an evidence of ignorance. As soon as the true cause of any disease is recognized attention is directed to its prevention in the first instance rather than to its suppression after the disease has appeared. For example, with tuberculosis we direct our attention to destroying the infectious agent rather than to quarantining the patient. Again, before the means of transmission of yellow fever was known the quarantine methods used in the attempt to control its spread were most rigid, but when the world came to know that only a mosquito could transfer yellow fever from an infected to a healthy person, quarantine was practically abandoned and attention directed to keeping mosquitoes away from the patients, to keeping them away from healthy individuals, and to the destruction of the mosquitoes capable of carrying the infection.

Consistency would suggest that we follow a similar course with all preventable diseases when we have learned how to control them. So far smallpox has been an exception to this rule. We have known for more than a hundred years how to prevent this disease, and yet quarantine of all those exposed to or associated with a smallpox patient, as well as the patient, is still the general custom. Public sentiment demands this, and too often the medical profession supports the public in this unjust demand.

To control any disease by means of quarantine we must restrain all infectious individuals during their entire period of infection. With smallpox this may be possible if the disease appears at the outset in virulent form and if municipalities are willing to bear the necessary expense of restraining all such individuals. But if the virulent form of the disease becomes epidemic, or if the disease prevails in mild type from the outset, practically nothing is accomplished through quarantine, for there will always be mild unrecognized or concealed cases at large during part if not the entire time of their illness. Under such circumstances, while the quarantine is a failure, it entails great expense on the public and on individuals. It also favors a continuance rather than a control of the disease, for it is conveying to the public a sense of safety that does not exist and thus encourages delay in vaccination in countries where compulsory vaccination is not enforced.

There is no objection to the isolation of smallpox patients, for we do not want the disreputable-looking creatures about. Those who are not protected by vaccination deserve no sympathy if they have reached mature years, and they, too, should be isolated or kept under rigid observation after an exposure to smallpox until it can be determined whether or not they are to develop the disease. To restrain or quarantine the immune, however, is an injustice which should not be tolerated.

Any one who will study without prejudice the course of smallpox must admit the protective value of vaccination. Why, then, is not every one protected? First, because people will not adopt such protective measures unless compelled by law so to do. Compulsory vaccination laws properly enforced will eradicate smallpox from any country.

Vaccination has been brought into disrepute by poor vaccine, by careless methods in vaccinating, and by the exaggerations and misstatements of the so-called anti-vaccinationists. It must be admitted that in some instances sore arms and even death follow vaccination, but when this happens the vaccinator is at fault rather than the vaccine, assuming that the vaccine is of good quality, as it should be in this country at the present time under government inspection. The production of all vaccine should be under some responsible governmental control. The punishment can not be too severe for placing on the market a vaccine that is not safe.

The vaccine may be ever so satisfactory, but if the vaccinator is careless or the vaccinated is not properly cared for, infection at the point of vaccination may follow. Such conditions are far more apt to occur in a country without compulsory vaccination laws than

8. Wien. klin. Wchnschr., 1908, No. 26.

* Read in the Section on Hygiene and Sanitary Science of the American Medical Association, at the Fifty-ninth Annual Session, held at Chicago, June, 1908.

in one where such laws exist. Under compulsory vaccination laws the exact amount of vaccine needed can be determined in advance. If it is known that 40,000 births occur annually in a state, then that state should have an annual market for at least 40,000 vaccination points or tubes. The producer, knowing this fact, can plan for producing this amount under the most favorable conditions. Without compulsory vaccination laws the vaccine producer has nothing to guide him in the amount of vaccine to be produced. He must, therefore, try to keep a safe quantity on hand. If a smallpox scare arises there is at once a call for a large amount of vaccine. The producers' supplies will be exhausted and they will hasten to replenish, although the conditions for so doing may be most unfavorable.

Careless methods of vaccinating should never be tolerated. They will exist, however, where there are no compulsory vaccination laws. A necessary accompaniment of compulsory vaccination is the public vaccinator, through whom the possibility of careless vaccination is reduced to a minimum.

Vaccination should be performed during infancy—by preference during the first six months of life. At this time the danger of infection at the point of vaccination is very slight indeed, for the child is living under ideal conditions. Still further, with compulsory vaccination laws the public vaccinator should choose his season for vaccinating. It is a well-recognized fact that vaccination should, if possible, be avoided during the hot summer months, both on account of the quality of the vaccine at that time and the condition of the individual to be vaccinated. In countries without compulsory vaccination laws vaccination is practiced only when the alarm signal is sounded. Children of school age are often vaccinated just before the opening of schools in the fall—the most undesirable season of the year from every point of view. The methods of vaccination in vogue in this country at the present time are such as to make us wonder that we do not have more infection following vaccination.

The antivaccinationists say that physicians are in favor of vaccination because of the fees they derive from it. This is absurd. A physician can not afford to vaccinate for the ordinary fee if he does it properly. He can make money on vaccinations only when he undertakes to vaccinate a great many people in a very short time—a kind of vaccination that should never be tolerated. Lady Mary Wortley Montague, in 1717, speaking of inoculation, said:

> I should not fail to write to some of our doctors [in England] very particularly about it if I knew any one of them that I thought had virtue enough to destroy such a considerable branch of their revenue for the good of mankind. But that distemper [smallpox] is too beneficial to them not to expose to all their resentment the hardy wight that should undertake to put an end to it.

The antivaccinationists do not look on protection against smallpox (vaccination) as did Lady Mary Wortley Montague on inoculation. Lady Mary said that the doctors would not inoculate for fear of reducing their business; the antivaccinationists say that doctors vaccinate to make money.

Vaccination should be free. The public vaccinators should be trained in their special work and should be careful and conscientious. Individuals should have the privilege, however, of choosing their own physicians as vaccinators if they wish, but such a private physician should vaccinate with as great care as he would do surgical work and should be paid a reasonable fee for his services.

Physicians have placed themselves under criticism by urging compulsory vaccination laws on legislators. The enemies of vaccination charge physicians with mercenary motives in giving such advice and the legislators too often listen to the ignorant ranters rather than to the scientifically trained physicians in such matters. Why should physicians place themselves in such an unenviable position? They should be satisfied with acting as educators, throwing the responsibility of legislation on the people themselves. As educators their influence should be against any attempt to control smallpox by means of quarantine.

In 1904, in the Conference of State and Provincial Boards of Health held in Washington, a committee was appointed to report on the advisability of the abandonment of isolation in the attempt to control smallpox. The argument of this committee was to be based on the following propositions:

> WHEREAS, In many parts of this country (at the present time) a mild variety of smallpox is prevailing, and first cases are quite generally unrecognized, thus making their complete isolation impossible and tending to spread the disease among the unvaccinated, and
>
> WHEREAS, The isolation of the many cases causes excessive expenditures in a fruitless attempt to restrict the spread of the disease, and
>
> WHEREAS, Isolation of smallpox patients is practiced chiefly for the protection of those indifferent or opposed to the only scientific means of preventing the spread of this disease, viz., vaccination; therefore
>
> *Resolved*, That a committee be appointed by this conference to consider this subject in all of its bearings, and report next year as to whether in states where the above described conditions exist the effort to control smallpox should not be confined chiefly to vaccination and revaccination, rather than to depend in part or in whole upon quarantine.

At the conference meeting of 1905 these propositions were thoroughly discussed, and while the majority of the state sanitary representatives were in sympathy with some radical action in favor of vaccination rather than quarantine as a means of controlling smallpox, no definite action was taken.

The Minnesota State Board of Health has taken a position favorable to vaccination and against any false teaching relative to the protective value of quarantine. It did this only after carefully considering the subject. It preceded the publication of its new regulations relating to smallpox by the publication of the following resolution:

> It having been established that smallpox will not occur in a well vaccinated community, and that all attempts to restrain this disease in a community not protected by vaccination by means of quarantine, will fail; that quarantine in a well-vaccinated community is unnecessary; that attempts to control the spread of smallpox by means of quarantine are unscientific, irrational, expensive and misleading; that in laying down strict rules for the quarantine of smallpox sanitary authorities are favoring unscientific and illogical methods for its control and are conveying false ideas as to the safety of the public, the Minnesota State Board of Health advises that after January 1, 1908, further attempts to control smallpox by means of quarantine shall be abandoned. Meeting of the board, Oct. 9, 1906.

The reason for postponing action on this recommendation until Jan. 1, 1908, was that time might be given those who wished so to do to provide for their own and

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others' protection through vaccination before adopting a change in regulations.

This action of the board greatly disturbed the anti-vaccinationists, who sent their agents through the state decrying the proposed action of the board months before the new regulations were made public. These regulations are as follows:

11. The local health officer having knowledge of, or having reason to suspect, the existence of smallpox, shall investigate, and at once place on the house where smallpox exists a sign setting forth the facts. This sign is to serve only as a warning to those who may wish to avoid the house, and not as an indication of quarantine. When the attending physician considers a smallpox patient as having recovered (no longer a source of danger) he shall report the fact in writing to the local health officer, who shall thereupon remove the warning card from the house. *The patient must not leave the house until after the removal of the warning card.*

12. The apartments occupied by a smallpox patient shall be deemed infected, and when vacated by death, removal or recovery of the patient shall, together with their contents, be thoroughly disinfected under the supervision of the local health officer.

13. Every physician shall immediately report to the local health officer, in writing, the name of every smallpox patient under his care, the state of his or her disease, and his or her place of residence. A report must be made for each case as it occurs in a family or household.

14. Every physician shall report in writing to the local health officer the death of any smallpox patient under his care within twelve hours thereafter.

15. The local health officer of any city, village or township must report within twenty-four hours to the secretary of the Minnesota State Board of Health all cases of smallpox occurring within his jurisdiction and the date of removal of the warning card.

When these resolutions were passed it was supposed that an old law was still in force which provided for the exclusion from school of unvaccinated children when smallpox prevailed in a community. It was thought that this would protect the young. It was found, however, that this law had been displaced by later legislation. The State Board of Health, at its regular meeting in April, 1908, passed the following regulations for the benefit of the unvaccinated:

17. Following an exposure to smallpox, every individual who can not show evidence of a recent successful vaccination or a recent attack of smallpox must be vaccinated within three days of the first exposure or placed under the same isolation restrictions as smallpox patients.

If smallpox prevails in a community, or if the disease appears in a school, all unvaccinated teachers and pupils must be excluded from school for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply with this requirement, the school must be closed for a period of three weeks.

If smallpox appears in any class in any college in Minnesota, all unvaccinated teachers and students in the class must be excluded from recitations for a period of three weeks unless vaccinated within three days of first exposure. Failing to comply with this requirement, the classes attended by such teachers or students must be discontinued for a period of three weeks.

The board expected criticism from the laity for making such a radical change in its smallpox regulations, but it expected the support of the medical profession on apparently such a logical procedure. Strange to say, there were not only prominent physicians, but certain sanitarians, who criticised the board's action. The board still thinks it was right and trusts that other state boards will follow its example.

ABSTRACT OF DISCUSSION.

DR. GEORGE W. WEBSTER, Chicago: If a smallpox patient is isolated, but the nurse and family come in contact with the patient, and are allowed to come and go as they please, are they not as great a menace to the public as the patient, after he has partly convalesced?

DR. G. B. LAKE, Wolcottville, Ind.: I am a member from a country district where this smallpox matter has been agitated. We have had several smallpox epidemics, and this question has been largely talked over among us. In towns where the quarantine has been enforced very strictly it has been a decided burden, because when a family, no matter in how good circumstances it may be, is quarantined for smallpox, and the breadwinner compelled to refrain from his necessary labor, the general understanding is that that family must be supported, not simply with the necessities of life, but also with any luxuries to which its members may feel themselves entitled. A person of mature years who refuses to be vaccinated absolutely deserves no sympathy, and I believe that the cutting off of the quarantine laws with regard to smallpox will be the quickest and surest way of educating the people in the necessity of vaccination.

DR. J. N. HURTY, Indianapolis: I endorse every word Dr. Bracken has said. There is not the slightest need of having smallpox. It is an indictment of the intelligence of a community for it to have the disease. There is only one prophylaxis for smallpox. Quarantine does not amount to a hill of beans. If a single patient comes into a community where smallpox has not been prevailing, isolation of that patient will probably stop the spread of the disease. If the disease gets started, as it did in Indiana, quarantine amounts to nothing. I am only sorry that we have a statute, which the board of health can not change, which requires that smallpox be quarantined. That is a useless expense. Down in our mining regions they love to be quarantined. If told that vaccination will protect them, the people will reply that they would rather have the disease than be vaccinated. The reason is that they will have a chance to lie around at home with support furnished for a while. They will run the risk of death, for they see that smallpox causes very few deaths. They care little for the inconvenience. It is in vain to tell them that we, being vaccinated, are not afraid of it, can not be attacked by it, can live with it—eat it, if we want to, or do as Dr. Brayton did, who inoculated himself with it over and over again, and carried the sore on his arm three months by inoculation to demonstrate that he could not have it. All this has no effect. What is the use of quarantine to control epidemic smallpox? Let those that want it have it. I regret that the Indiana statute which compels us to quarantine smallpox is repealable only by legislative act. On the Monon road to Indianapolis, in Carroll County, are about two hundred cases along Wild Cat Creek, some very severe. We just let them alone. They will never have it again. The health officer of Sullivan County took his thoroughly vaccinated child with him when he went to see cases, to demonstrate to the people of Sullivan County how to go free from smallpox. Of course, neither father nor son contracted the disease because they were successfully vaccinated. Even such demonstrations do little good. I endorse Dr. Bracken's contentions.

DR. HEMAN SPALDING, Chicago: It is immoral to advise that every one be allowed to get smallpox who wants it. One might as well let a man commit suicide because he wants to do so. Quarantine, of course, is secondary. Vaccination is an absolute preventive; if everybody can be induced to believe that and act on it there will be no more smallpox. In Oskaloosa, Iowa, I made such a statement before the city council. A member of the council said: "Let's go right out and get them all vaccinated." I said he might start out and try it; it would take one thousand to vaccinate another thousand. It is necessary to quarantine and isolate. Right out of Dr. Bracken's and Dr. Hurty's back doors smallpox patients are coming to Chicago all the time. It cost us $100 to take care of patients that Dr. Bracken has failed to quarantine in Minnesota, and the same is true of Dr. Hurty's state. We have four cases of smallpox in Chicago now, one from Montana, an-

other from Tennessee, all four from outside of the city. Nearly all our cases are imported. We have this city so well vaccinated that smallpox patients can enter a car or hotel or any place here, and out of 500 people they meet, only one or two will be infected. Vaccination stands first, quarantine second. Quarantine can not be dropped under the present condition of affairs. I do not approve the method of Minnesota. It has made me turn gray this winter. We have had more trouble with that state than any other. Dakota is doing the same thing, and we have three or four cases from there. I am absolutely opposed to Dr. Bracken's paper as it stands.

DR. C. F. WILLIAMS, Columbia S. C.: I think that Dr. Bracken is on the right line. I do not think, however, that exposed individuals should be allowed to run at large unless vaccinated. I agree with him that the shotgun quarantine does harm instead of good, for when such a measure is instituted cases are going to be concealed which otherwise would be reported. When the bread-earner is shut up it becomes necessary to feed his family, and in a very widespread epidemic it is not long until the city or county treasury is so depleted that a howl goes up from this quarter, resulting, as a rule, in antagonism against those trying to control the disease. In South Carolina we have a compulsory vaccination law. As soon as one develops the disease, patient and attendant are isolated, and all the occupants of the house and those exposed vaccinated. The occupants are then allowed to go in and out just as though nothing had happened. The public is warned by a sign, bearing the words, "Contagious Disease Here," which is placed by the entrance to the house. When the case is dismissed by the attending physician the house is thoroughly disinfected. By this means we have been able to control the disease, and in very few instances has a second case occurred.

DR. H. M. BRACKEN, Minneapolis: In answer to Dr. Webster's question, we allow the vaccinated to go to and from placarded houses. That is exactly in line with the teaching of Dr. Chapin's paper this morning, and with the position taken by Dr. White yesterday. Dr. Gorgas says that the sick man is the great transmitter of disease. It is not the healthy individual who spreads smallpox; it is the sick, and we want to impress this fact, not only on the laity but also on members of the medical profession. I admit that there is a possibility of transmission by a second to a third party, but that possibility is so slight that we can ignore it, and not do any great harm in the community. We certainly can do more good by advising people that they must protect themselves by vaccination than by giving them the idea that we are going to protect them by quarantine. Dr. Spaulding says that smallpox is coming into this city from Minnesota. If that is so the Chicago Department of Health is not doing its duty. Dr. Evans was in Minnesota a short time ago, and took the position that if Minnesota wanted to have smallpox it ought to have the privilege, but that it was a question if outsiders should not quarantine against the state. I wrote to Dr. Evans, at that time, urging him to advise me of every case of smallpox found in Chicago from Minnesota. At that time he advised me of one case. We sent an inspector at once to the place in Minnesota from which this patient went and found smallpox patients not properly looked after. These patients were at once placed under proper control. We have not had notice of a single case of smallpox in Chicago from Minnesota since that time.

Pasteur Institutes in India.—The Pasteur institute for the treatment of hydrophobia is now in full swing at Kasunli, a small hill station in the Punjaub, on the road to Simla. Large numbers of Europeans come here from near and far for treatment, and soldiers are sent by the government free of charge from all parts of the empire. In some instances natives will travel immense distances in order to place themselves under treatment, although in most cases they can not be prevailed on to recognize the facts of the situation. Hydrophobia is terribly prevalent in India among dogs and jackals, but there is no particular reason why it should not be as amenable to preventive measures in India as it has proved to be in the British Isles.—*Medical Press and Circular.*

Clinical Notes

THE TREATMENT OF PERNICIOUS ANEMIA WITH CHOLESTERIN.

CHARLES E. SIMON, M.D.
BALTIMORE.

In a recent communication Reicher[1] reports three cases of pernicious anemia and one of secondary anemia referable to nephritis in which cholesterin was used for therapeutic purposes, the idea in mind being to counteract any hemolysins that might be active, in a manner analogous to the action of cholesterin on cobralecithid. Similar considerations led me to the same attempt over a year ago. But as I have had only six cases of pernicious anemia at my disposal during that time, I hardly thought my data sufficient to warrant their publication. Reicher's paper, however, makes it desirable to place on record the little that has been done.

All six were typical cases of cryptogenetic pernicious anemia, one of them being of the so-called aplastic type. Three patients were in an advanced state of the disease when coming under observation and only lived for a few weeks; in these no effect whatever was observed from the use of the cholesterin. A fourth patient was discharged unimproved after a three weeks' course of the treatment and died a few days later. In the fifth only 24 gm. had been administered when the treatment was suspended, and death occurred shortly thereafter.

An apparently beneficial effect was obtained in the remaining case, but as the patient at the time when the cholesterin treatment was begun was virtually in her first attack one naturally hesitates to ascribe the noted improvement to any one therapeutic factor. It is noteworthy, however, that the resumption of the cholesterin some months later, when a relapse had occurred, was again followed by marked improvement. This patient is still living and in good condition. When first seen the red cells numbered 1,744,000, while the hemoglobin was 46 per cent.; there was then marked anisocytosis with a distinct tendency to macrocytosis; there was poikilocytosis and extensive granular degeneration (so-called). Normoblasts with pyknotic and karyolytic nuclei were fairly numerous; there were some free nuclei and a few mitotic cells; megaloblasts were scant. After a three weeks' course of cholesterin the red cells had increased to 4,000,000 and the hemoglobin to 80 per cent. Anisocytosis was still noticeable but less marked than before; granular degeneration was slight and there were no nucleated red cells. Subsequently the anemia became more marked again, but, as I said before, the patient again improved and at the present time is well.

In Reicher's three cases of pernicious anemia one patient remained unimproved, while in the other two the effect of the cholesterin was decidedly beneficial. One of these patients was admitted in a wretched condition, with intense dyspnea, ascites, pleural effusion, edema and a red count of 750,000 with 18 per cent. of hemoglobin. After a week the count had risen to 1,750,000 and the hemoglobin to 30 per cent., while the threatening symptoms had all disappeared. The improvement was thus quite remarkable, but after a few weeks no further gain was obtained and still later a relapse occurred which ended fatally.

1. Berl. klin. Wchnschr., 1908, Nos. 41 and 42.

As to the administration of cholesterin, Reicher made use of a 3 per cent. solution in olive oil, of which he administered 100 gms. a day—hence 3 gms. of the substance. In this manner he obtained a much better resorption than with aqueous suspensions. In future I shall follow the same plan; in the past I have made use of cholesterin in capsules. A serious drawback to the extended use of the material is its cost, viz., 50 cents a gram; this makes it doubly important to achieve as extensive a resorption as possible. Regarding its nontoxicity, Reicher's observations are quite in accord with my own; even with 4 and 5 gms. a day no deleterious results whatever were noted.

A theoretical discussion of the rationale of the use of cholesterin in anemias of the pernicious type does not seem necessary at present. The sole object of this communication is to place my results on record. So far as they go they seem to indicate that in advanced cases very little, if anything, is to be hoped for from the use of cholesterin, while in early cases improvement may follow.

1302 Madison Avenue.

THE INTRAVENOUS INJECTION OF MERCURY.

GEORGE P. CRUME, M.D.
MINNEAPOLIS.

The hypodermic method of administering mercury has gained a distinct and deserved place in the therapy of syphilis. Not only has the technic been gradually improved, but preparations less irritating and better suited to our needs have been produced.

For convenience of study this method readily admits of division into subcutaneous, intramuscular and intravenous injections. It is especially to the last that I desire to call attention.

The introduction of mercury (sublimate solution) by means of intravenous injections was first recommended by Bacelli in 1892, though other drugs had been administered in this way several years earlier. Two reasons have prevented this method from gaining more than limited favor with the profession; first, the delicacy of the technic; second, the fact that it is regarded by some, many of whom have never used it, as dangerous.

My experience with this method began about fifteen months ago and since then I have given over 200 intravenous injections, a number somewhat limited but certainly entitling one to a preliminary opinion not only as to the technic but as to the potency of the drug when thus administered.

Any preparation free from insoluble particles may be used. Solutions of bichlorid, biniodid or cyanid in 1 per cent. strength are most frequently given, the dose being from 1 to 3 c.c. repeated daily or every other day. My experience has been almost entirely with the cyanid, a salt which contains 79 per cent. of mercury and is, I believe, less irritating than the sublimate.

TECHNIC.

The technic is simple, but demands care and exactness. Almost any of the superficial veins may be used; the median basilic and cephalic are generally recommended, but I find that those on the back of the hands are most often suitable. A bandage is tightly applied proximal to the site of injection to distend and render the vein prominent. I then apply to the site for injection chemically pure alcohol on a pledget of cotton without much friction. The needle and syringe, having been prepared, may now be loaded, the needle attached and introduced almost parallel to the vein till in the lumen and in the direction of blood current. Then the bandage should be removed and the injection slowly given. When the needle is withdrawn the blood usually flows rather freely from the small puncture. This should be wiped away and no dressing applied.

Fine platino-iridium needles (2 to 3 cm. in length) should be used, and the Luer all-glass syringe is best adapted to this purpose.

It is not always easy to be certain that the eye of the needle is in the vein, though it is advised to determine this by the lessened resistance and the freedom with which the point can be moved, indications which to me are not reliable when the vein is small or located in loose cellular tissue. Using the Luer syringe, I chanced to discover that whenever the needle is in the lumen of the vein the blood at once comes into the barrel of the syringe, provided the piston is not held. This has proved in my hands a valuable aid indicative of the presence of the needle in the lumen of the vein, but it is an indication which can not be obtained unless the piston fits the cylinder so accurately that the blood pressure is sufficient to press it backward. This guards against undue wounding of the delicate endothelium, which predisposes to an endophlebitis. After the needle is in position the strictest attention is needed to keep it there until the injection is consummated. To this end an assistant is necessary to remove the bandage.

We know that syphilis is caused by a special organism, but our knowledge of the action of mercury on that organism remains purely empirical. We agree that the remedy must be absorbed, must reach the circulation, before it exerts a general effect. Then if the drug is administered by the mouth, by inunctions or intramuscular injections, there is not only the delay, which may be several days, before the circulation is reached by an amount of the drug sufficient to produce the physiologic effect, but also the greater disturbance of the system, and the increased difficulty of maintaining the desired intensity of effect. It seems to me that these disadvantages are best met and overcome by intravenous injections; that this is our best means for meeting the needs of those urgent cases in which great destruction or irreparable damage is imminent, as for example, severe visceral disease, lesions of the eye or of the nervous system. For not only can the physiologic effect be produced, but the patient's tolerance can be discovered in two or three days and with perfect safety by this method. In certain specific conditions not infrequently met this is an advantage of first importance.

OBJECTIONS.

Nevertheless, this method is not without real as well as fancied objections.

1. The technic is somewhat delicate, it being easy to miss the vein or pass the needle entirely through it.

2. Injection outside of the vein causes a cellulitis with induration at site of injection, an acute phlebitis; injection into the wall of the vein or the valves or failure to remove the bandage before injecting causes an acute endophlebitis. None of these accidents is serious, neither do they occasion much pain or inconvenience.

3. Veins are not always sufficiently prominent for the operation, especially in women and obese subjects.

4. A. Fournier asserts that it is imprudent to bring the endocardium in direct and sudden contact with a toxic agent such as mercury. But he produces no evidence and admits never having given an intravenous injection.

5. It is said that the mercury is more rapidly eliminated than by any other method and that recurrences are more frequent.

6. It is further asserted that the therapeutic effects are not very encouraging, not being, in fact, superior to those of other methods.

This last objection is not what, after careful and impartial consideration of the method, would be expected to be true, and it is not believed that experience in well-selected cases will ever establish it. That recurrences happen after treatment by this method is not denied. They occur, and often to our embarrassment, after treatment by every method; that they occur earlier than when other methods are used has not been proved, and, if it were, there would still remain a valued place for intravenous injections in the therapy of those severe conditions above indicated.

ADVANTAGES.

As a routine practice very few advise this method; as a provisory means when it is necessary to act quickly, to surprise the enemy as it were, in cases of rapidly-invading syphilis, it should receive first consideration; also as a therapeutic test; and for this purpose mercury, not the iodids, should be used in the great majority of cases. Other advantages which this method enjoys are: Absence of pain, mathematical dosage, and instantaneous introduction into the circulation.

815 Andrus Building.

ILEOCOLITIS WITH INTOXICATION

PRESENTING SYMPTOMS OF MENINGITIS AND FOLLOWED BY MULTIPLE NEURITIS.

H. D. McCARTY, M.D.

BALTIMORE.

History.—January 5, F. o L., aged 5, had been as well as usual. At his evening meal he partook freely of canned corn, and before going to bed ate three cherry tarts. He awoke at 2 a. m., with violent pains in the abdomen, followed by nausea and vomiting. The child had a very high temperature, and before daybreak appeared somewhat delirious. The bowels were constipated. He appeared more or less stuporous, but it was not until the following Tuesday, January 9, that symptoms resembling those of meningitis developed. The family was much alarmed by the drawing back of the child's head and the occurrence of internal squint. He became even more stuporous; the tongue was thickly coated and the breath offensive, the temperature running 103-104, pulse about 120. For twenty-six days after the onset the temperature varied from 101 to 104, and the pulse was continually high. The attending physician was asked to call in a consultant, which was done, and a diagnosis of meningitis was made.

Examination.—I saw the child on January 31, at which time he presented the following picture: He was a rather large boy, extremely emaciated, with pale mucous membranes, and lemon-colored, flabby, dry skin. The patient assumed the lateral position in bed, the head was drawn back with marked rigidity of the neck and contraction of the abdominal muscles. The lower extremities were flexed on hip and knee, and all the flexors contracted and rigid. Kernig's sign was marked. The hands were clenched, arms flexed at elbow and usually held across the chest, the patient from time to time putting his hands to his mouth. The palpebral apertures were wide and equal. The pupils were dilated, equal and reacted to light sluggishly and contracted slightly to accommodation. The right eye was slightly turned in. No knee-jerk was obtained, but the contracted condition of the lower extremities made the test uncertain. Stimulation of the plantar surfaces gave plantar response. (Babinski was absent.) There was hyperesthesia of the lower extremities. Any manipulation of them evidently caused great pain. Dermographia was marked. The boy was conscious but stupid; he recognized those about him and was able to call for what he wanted. He was cognizant of pain and discomfort and called constantly for food. The presence of the father seemed to irritate the child. The child passed urine freely. The bowels were obstinately constipated. The pulse was 110 to 120, and irregular. Respirations varied in number and depth. No definite periodicity was noted. The picture was one of meningitis.

Treatment.—Being impressed after several days by the condition which had changed but little since the onset, except for the failing forces, and by the character of the stools, which were foul-smelling, dark brown in color, containing large amounts of thick jelly-like mucous, occasionally streaked with blood, decomposing clots of milk and small undigested particles of shredded wheat biscuit, I was compelled to think that the condition was possibly due to the toxins absorbed from the intestinal tract. Treatment was instituted accordingly. A large dose of castor oil was given and the bowels washed on alternate days with nitrate of silver, 1/4 gr. to the ounce, and salt solution, a long soft catheter being used. For the first week nothing but whey, albumin water, and predigested milk and brandy were given at regular intervals. One dram of bismuth in emulsion was given every twenty-four hours.

Clinical Course.—From the first the improvement was rapid and marked and the boy gained in strength and took on flesh at an astonishing rate. As the symptoms of irritation cleared up it became evident that there was a definite symmetrical paralysis of the legs. The muscles of the legs had become wasted, and there was definite weakness of the flexors of the ankle. The knee-jerk was not obtained until six weeks after improvement was first noted. The patient did not walk until about three months after improvement began. The gait was feeble, unsteady, the legs being lifted high, and the feet slapped on the ground. Examination showed the double foot drop so commonly seen in multiple neuritis. There was never any marked weakness in the arms.

It would seem from the rapid improvement following on treatment directed toward the intestinal tract that one may fairly assume that the meningeal symptoms were due surely in large part to the action of toxins and not to a definite inflammation. The involvement of the legs can be explained by the action of the poison circulating in the blood. In consideration of the admitted difficulty of the diagnosis between meningitis and the results of intestinal toxemia, this case affords great encouragement for thorough research for the primary seat of the infection, even in cases in which the outlook seems anything but favorable.

613 Park Avenue.

Regional Anesthesia by Spinal Technic.—Avramescu believes that the anesthetic injected into the spinal cavity acts on the roots, not on the spinal cord, and that consequently only those roots should be acted on which innervate the field of operation. In his communication on the subject, published in *Spitalul*, and summarized in the *Münch. med. Wchnschr.*, 1908, 2457, he states that the anesthetic should be injected between the fourth and fifth lumbar vertebræ when the operation is to be on the external genitals, perineum or anus, and between the first and second lumbar vertebræ for the inguinal region and legs. The ninth or tenth thoracic vertebræ correspond to the abdomen below the umbilicus, the sixth and seventh to the region above the umbilicus, and the first and third to the thorax. No injection should ever be made above this, on account of the danger of paralyzing the phrenic nerve.

A CASE OF ERYTHROMELALGIA.

J. P. KANOKY, M.D., AND R. L. SUTTON, M.D.
KANSAS CITY, MO.

Typical examples of erythromelalgia, the "red neuralgia" first described by Dr. S. Weir Mitchell in 1872, are encountered with sufficient infrequency to merit more than passing notice.

Patient.—A. B., physician, aged 54, applied to us for treatment on July 1, 1908.

History.—He is a native of Prussia, having removed to America in 1887. He has had one attack of gonorrhea, over thirty years ago, but has never had syphilis. There is no history of any serious illness, although he has been a frequent sufferer from slight attacks of rheumatism and has for many years been subject to neurasthenia. His circulation has always been good. He has never sustained an injury of any kind and has never indulged in violent exercise or experienced prolonged physical fatigue. Formerly he was a moderate drinker of beer, but for the past ten years he has been an abstainer. He averages one cigar a day. In June, 1908, his wife, who has always been an invalid, had a stroke of apoplexy, with resulting partial paralysis. For a considerable period the husband was with her constantly, day and night, and this nervous strain, together with the loss of sleep and his susceptibility to neurasthenia, came near resulting in a mental breakdown.

Present Illness.—It was at this time he first noticed an irregular, rosy to dark red mottling of both palms, including the palmar surfaces of the thumbs and fingers, with some swelling and slight elevation of temperature. This was especially marked if the arms were allowed to hang at the sides. When the hands were held over the head the redness slowly disappeared, although the puffy condition of the tissues persisted for several hours. About one week after this he experienced a severe attack of neuralgia. The pain, which was burning and stinging in character, "as if a puff-ball made of red-hot needles had been forcibly grasped," affected both palms, came on suddenly, and lasted for about thirty minutes. Since that time he has had an attack almost daily, the paroxysm lasting from a few minutes to an hour. The only local application that gave any relief was cool water, and its effect was only transitory. Hot or cold water increased the pain.

Examination.—Both palms were found to be slightly swollen (the patient had had an attack fourteen hours previously) and a trifle paler than normal. There was no pain, although the parts were extremely sensitive to the touch. There was no pitting on pressure. Compass points separated by a distance of 1 cm. could be readily distinguished in the centers of both palms. Sensibility to both heat and cold was increased. There was no atrophy or loss of motion in either limb, and no tenderness over the nerve trunks. The reaction of degeneration was not present. The skin was normal, so far as could be ascertained with a high-power hand-glass. The patient was in constant fear, however, of becoming infected through some skin abrasion and frequently thought he had found cracks in the epidermis where, in reality, the integument was smooth and unbroken. Both pupils were normal and reacted readily to light. Urine examination was negative. The knee-jerks on both sides were exaggerated and the ankle-jerks a trifle excessive. The blood pressure was 128 mm. (Riva-Rocci, 14 cm. armlet, recumbent posture). The radial arteries were softer than is usual in a man of 54. When seen on the following day the patient was in the midst of an attack and appeared to be suffering intense pain. The palms were deep red in color and, especially those portions overlying the metacarpo-phalangeal articulations, greatly swollen. The parts were much more sensitive than at the first examination, the slightest pressure giving rise to increased suffering. Manipulation of the limbs or pressure over the nerve trunks did not increase the pain.

Course of Disease.—Since then we have seen him many times while in the course of an attack, the symptoms being practically the same in every instance. Worry, either as a result of his wife's condition or as to his own future, and excessively hot weather both have a tendency to increase the frequency as well as the severity of the paroxysms. On August 24 he endeavored to turn a tight water faucet with his right hand. Considerable force was used, the greater part of the pressure being borne by the ball of the right thumb. A few hours afterward the thumb became red, swollen and extremely painful. The edema persisted for forty-eight hours, then gradually subsided. Three days later a superficial exfoliation of the overlying skin began and, during the following week, the entire palmar surface of the thumb shelled off, being replaced by apparently healthy epidermis. On September 15 it was noticed that the outer layers of this new skin had become cracked and broken and, although signs of inflammation were absent, a second exfoliation occurred. On October 10 several small papules could be seen beneath the epidermis of the right palm. Five or six reached the surface, vesiculated and scaled off, having given rise to practically no subjective symptoms. The patient has now been free from severe neuralgic attacks for over two months, although there is considerable congestion and some pain manifested when the arms are allowed to hang naturally at the sides for an hour or more. His general health is much improved, because, in large measure, of the return of cooler weather.

Treatment.—Of the numerous therapeutic agents tried in this case only three have proved of perceptible value: lecithin, as a tonic; aspirin, given for its antirheumatic effect and empirically to alleviate the condition; and the *x*-rays, employed because of their action on the peripheral nerve endings. The exposures, which were brief (from three to five minutes, on alternate days, a soft tube, at 15 cm. distance, being used), appeared to give more relief than any other measure applied.

276 Ridge Building.

POSTCLIMACTERIC UTERINE HEMORRHAGE, DUE TO RELATIVE HYPOTHYROIDISM.

C. C. WALLIN, M.D.
LEWISTOWN, MONT.

Physiologic antagonism between the secretions of the ovaries and thyroid has, for some time, been in a general way recognized. Bandler very definitely attributes many of the nervous symptoms arising in adolescence and in the climacterium to "relative hyperthyroidism," by which is signified a failure of the ovaries to produce sufficient of their internal secretion to neutralize the entire product of the thyroid. Thus a condition similar to Basedow's disease is brought about, which condition is relieved by the administration of ovarin.

That the normal balance between the secretions of the thyroid and ovaries may be disturbed by a deficient thyroid secretion, thus bringing about a relative hyperthyroidism, which may be the cause of uterine hemorrhage, I have not seen stated in any of the literature at my command. The following case demonstrates that such a condition may arise:

Patient.—Mrs. D., aged 55. Early history uneventful. Menses were established normally at 14 years, and were regular and painless until the age of 38. The patient had four children, all the labors being normal and without instrumental aid.

Present Illness.—When the patient was 38 menstruation ceased for several months, since which time it had been irregular in periodicity and quantity, the flow occurring at intervals of from two to seven months, and being accompanied by a sense of constriction in the throat and some visible enlargement of the thyroid, together with general nervousness. When first seen by me in April, 1908, the patient had been "feeling bad" for several days, and for the two days previous had been flowing more than usual, yet was not sick enough

to go to bed. This meeting was rather casual and she was advised to keep off her feet and rest for a day or two. After two days the flow was unabated, the general nervous condition worse, and the thyroid gland decidedly enlarged.

Treatment.—Thyroid extract was administered in doses of two grains three times daily, and at the end of the twenty-four hours following the flow had ceased and the swelling of the thyroid was perceptibly diminished. After twelve doses the size of the gland was normal. Since this experience the patient keeps a supply of thyroid on hand, and when she feels an exacerbation of nervous symptoms, with constriction of the throat and pelvic congestion, takes a few doses and is relieved.

The results obtained are satisfactorily explained only by recognizing the antagonistic influence of the secretions of the glands mentioned. It has long been known that certain enlargements of the thyroid are due to a deficiency in its proper secretion. The rôle of the ovarian secretion in causing congestion of the pelvic organs, thus aiding in bringing about the menstrual flow, is a somewhat later conception. In the foregoing case thyroid insufficiency is evidenced by the enlargement of the gland. The uterine hemorrhage is attributable to the action of that portion of the proper ovarian secretion which was not neutralized, owing to the deficient thyroid product. By treatment which supplied the lacking thyroid substance the normal balance was restored, the relative excess of the ovarian secretion was neutralized, and the pelvic congestion and consequent hemorrhage checked. On the thyroid the usual action of reduction in size was obtained as in the type of goiter alluded to.

Therapeutics

ASTHMA.

In the first place, the disease asthma should be dissociated from conditions which are termed asthmatic. A patient may be asthmatic from various causes, but the term asthma should be limited to the disease or condition itself, i. e., periodic attacks of bronchial spasm. More or less continued dyspnea, with or without whistling râles, and with or without acute attacks of asthma, may be caused by cardiac disease, cardiac asthma; by renal insufficiency, renal asthma; by plethora, causing attacks of acute hyperemia of the lungs; by arteriosclerosis; emphysema; diabetes; thyroid disturbances, and by the various anemias. Spasmodic asthma may be caused by bad heart attacks; by acute toxemia from renal insufficiency; by exacerbations of gout, probably due to a toxemia from nitrogenous mal-metabolism; by acute indigestion, and by gastrointestinal irritants causing a swelling of the mucous membranes of the bronchial tubes, really an urticaria. This swelling of the mucous membrane of the bronchial tubes has been caused by diphtheria antitoxin.

The diseased condition, or neurosis, termed true asthma, is often due to irritation of the nose and throat, and sometimes of the ear; is frequently due to chronic bronchitis, often is concomitant with acute disturbances of the mucous membranes of the upper air passages, as when caused by irritations from pollen, such as hay fever, rose fever, and by various dust and drug irritants. Asthma, however, is frequently a neurosis alone, not being caused by any one particular condition or irritation. This is pure "cussed" asthma and has been termed the "epilepsy of the lungs." Probably these unexplained attacks of asthma are caused by some irritant in the blood similar to the exciting cause of an epileptic attack. Such irritations being removed or prevented, the frequency of the attacks will be diminished. However, like epilepsy and like migraine, a habit of asthma having been formed, even after the early exciting cause has been removed, the nervous centers having become accustomed to the periodic discharge of excessive energy, will often continue this vicious habit. Consequently, like a beginning *petit mal*, and like a beginning eyestrain headache, little mild recurrent attacks of asthma should be inhibited, if possible, at the beginning, lest the patient be condemned to suffer for years, or a lifetime, from recurrences of this terrible condition of real asthma.

An attack of asthma generally occurs at night, and may be preceded by headache, some symptom of indigestion, mental depression or nervous irritability. There is at first some slight dyspnea and a short dry cough. The dyspnea and consequent cardiac distress increase, and the agony suffered by these patients can not be understood unless one has seen them suffering from an attack of this terrible disease. The agony is almost as great as that of acute cardiac dyspnea, although there is not so much mental anxiety. The patient may be pale or almost livid, and the expression of the face shows the suffering due to attempts to inspire, and then to expire, through the contracted bronchial tubes. The muscles of inspiration being stronger than the muscles of expiration, for a time more air enters the lungs than can get out, and little by little there is increased chest distention. Percussion shows hyper-resonance. The greatest amount of wheezing, as shown by the stethoscope, is in expiration, and the expiration is prolonged in the attempt to empty the lungs and prepare them for the next inspiration. If the bronchial secretion begins, as it generally does, moist râles may also be heard, and, after a series of spasmodic efforts, the cough brings up white glairy mucus.

The pathology of the condition is a spasm of the bronchial tubes. To what distance and to how small bronchi this spasm extends can not be well decided. No one should contend that the mucous membrane of the bronchial tubes may not suddenly swell and this swelling alone, obstructing the passage of air into the deeper portions of the lungs, cause an asthma. Such is doubtless the condition in certain poisonings by drugs that cause urticaria and in the rare instances of antitoxin poisoning. Also it is not only probable but a fact that sooner or later in an attack of asthma the mucous membranes become more or less congested from the upset condition of the usual differences in the pressure within the lungs or without the lungs, which is so readily understood if one recognizes that the right side of the heart has lost its aid from the usual negative pressure in the lungs. This congestion of mucous membranes, of course, soon means exudate, and exudate means more or less mucous and watery secretion. But this is only an incident in ordinary asthma, the spasmodic contraction of the bronchi is the cause. This is not true of the asthmatic conditions caused by circulatory disturbances. Such asthma may be caused more by sudden hyperemia of the mucous membrane of the lungs than by the spasmodic contractions, but true asthma is as above described.

During the attack little rice-like particles, which are white and gelatinous, are often coughed up and have

been called "*perles*" of Laennec. These little pellets may sometimes be unfolded, as first described by von Curschmann, into little spiral strings of mucin, some of which may be wrapped around a globule of mucin. These *perles* probably originate in the smaller bronchial tubes. Sometimes, also, sharp octahedral crystals are found in the expectorated matter. These are known as Leyden's or Charcot's crystals. Whether or not in certain patients these crystals, or these pellets, of mucin are the cause of the attack of asthma has not yet been determined, but some patients are more or less asthmatic as long as these little affairs or objects are found in the sputum. When they are no longer present the cough ceases, the little bronchitis which the patient has had ceases, and the asthma may be absent for a shorter or longer period of time; then a recurrence of the condition generally takes place. If the blood is examined during the attack or shortly after, frequently a greatly increased number of eosinophiles are found. This would seem to denote gastrointestinal irritation.

The length of these attacks of acute asthma, if unrelieved, varies from an hour or two to all night, and sometimes an attack may last several days. Occasionally the attacks last for many hours, or even days, in spite of all treatment, and any temporary relief given by powerful drugs may not prevent the resumption of the asthmatic spasm the moment the patient is out of the influence of the drug. The amount of dyspnea that the patient has, and the amount of suffering and the seriousness of the attack, do not bear a close relation to the amount of wheezing that is heard. A patient may not suffer greatly from dyspnea so long as he is sitting upright, and yet be wheezing like a decrepit old horse.

The longer the paroxysm lasts and the more intense it is the greater the danger of permanent injury to the heart and the greater the danger of the distention of the chest, so injuring the lung tissue as to make the emphysema permanent. Even after repeated attacks most patients have no cardiac injury and no lung injury, but this is doubtless because most of those who suffer from acute asthma are young; the older patients do have more or less lasting bronchitis, heart debility and more or less constant dyspnea and often emphysema. It is rare for a patient to die during an attack of acute asthma, but the condition should always be considered serious, as it could never be decided how much future disability was caused by the prolongation or repetition of such serious disturbance of the vital functions of respiration and circulation.

Acute attacks of asthma may occur every night for a series of nights, and then not for a long period, or after one attack there may be no more for some time, or they may occur more or less periodically, or they may recur only at certain periods of the year or in certain places. These last are likely to be due to nasal irritations. The attacks may also occur more or less frequently for several years, or even for a lifetime.

The treatment of this troublesome disease, or condition, will never be a success unless the cause has been determined, and, if possible, removed. Hardly any patient with any disease should receive a more careful general examination than the asthma patient. The lungs must be carefully examined for bronchitis and emphysema, and more serious conditions found or eliminated, and the blood pressure taken. The digestive ability of the stomach and intestines should be investigated, the urine should be examined, and all possible reflex causes sought in the throat, nose or ears. If all tangible causes of the asthmatic attacks have been eliminated, a careful analysis of the excretion of the various salts and solids in the twenty-four hours' urine, on a known diet, should be made. Even careful examinations of the feces, on a known diet, may give conclusive evidence of the cause of the toxemias that give rise to asthma. So much for negative evidence.

Positively, asthma is caused by polyps in the nostrils, hypersensitive mucous membrane in the nostrils, hypertrophy of the Schneiderian mucous membrane, adenoid conditions of the nasopharynx, lingual tonsil irritations, and tonsil irritations and concretions, by growths or irritations in the larynx, chronic bronchitis, emphysema, insufficiency of the right side of the heart due to various cardiac lesions, arteriosclerosis, hyperacidity of the stomach, intestinal sluggishness and the absorption of toxins therefrom, insufficient urine excretion, amenorrhea, hypothyroidism, i. e., insufficiency of the thyroid, gout, diabetes, and uremia. Asthma also occurs when no amount of investigation can discover a cause other than the intangible condition of a neurosis.

Certainly, the cause being ascertained, the prevention of the action of that cause, if possible, is the height of the scientific treatment of asthma, and it is obviously unwise and unscientific to give all kinds of recommended drugs for the prevention of asthma when the etiologic factor has not been determined, and, finally, by a long process of trying one drug after another, find something that will, perhaps, benefit the patient. Such treatment is just as obsolete as is the administration of large doses of quinin in continued fever, and if the quinin does not prevent the progress of the disease, decide that the fever is typhoid.

Perhaps the most frequently successful drug in preventing the recurrence of asthma is an iodid, and this is probably because most asthma is due to affections of the air passages, and this drug is specifically a stimulant to the mucous membrane of the nose, throat and bronchial tubes. If any chronic disturbance is located in these mucous membranes the iodid tends, first, to increase the exudate from these membranes, then to make the mucus more liquid, and, while at first apparently irritant, soon relieves congestion of these membranes, and often, sooner or later, cures a chronic congestion and causes the membrane to become healthy. Hence the frequency of success from iodid simply emphasizes the necessity of a careful examination for, and the removal, if found, of any nasal obstructions or irritations. After such removal, a sensible treatment to prevent the recurrence of attacks would be the prolonged administration of iodids, and very large doses are seldom needed, or if the history of the attack shows long standing of the disease, the treatment of the neurosis by bromids is advisable, and here again the dose should not be large. We should not produce debility either with iodid or with bromids.

The patient under the administration of either drug should be carefully watched, and if no weight is lost and the digestion is good, we may continue such treatment for some time, gradually reducing the drug as the attacks of asthma are inhibited. For the prolonged use of either iodids or bromids the sodium salts are the best, as sodium does not cause muscle debility and is not poisonous to living tissues, as is potassium. In asthma due to chronic bronchitis, and in asthma with but little bronchitis, but with the repeated expectoration of the round

gelatinous particles, the prolonged use of iodids seems to have the best curative effect.

Arsenic, a so-called alterative drug, seems at times to have a specific action on the organs of respiration. In chronic bronchitis, in asthma, and in catarrhal conditions of the air passages, arsenic, when given for a long period, is sometimes of considerable benefit. The respiratory ability and freedom from colds and coughs of the arsenic eaters of France and the Alps is well known.

A local cause in the upper air passages having been removed, if there was any such, besides treatment either by iodids or bromids, if either one is deemed advisable, anything that will improve the general health of the individual should be utilized. An occupation in which there is an atmosphere of dust or other irritant should be changed for one more suitable. Perhaps indoor work should be changed for outdoor work, perhaps the climate or location should be changed. Any indigestion, gastric or intestinal, should be corrected; constipation should be prevented; anemia should be treated, and insufficiency of the thyroid, if present, should be noted and modified.

If asthma recurs at certain periods of the year as does hay fever, the preventive treatment is the same as for hay fever. Anything that will reduce the nasal irritations and congestions will relieve the asthma, and any change in location that will prevent the hay fever will generally prevent the asthma. To just what locality or climate an asthmatic patient should be sent is difficult to determine. Also, it is impossible to predict that, because one patient is benefited by a sojourn or residence at one particular place, that place will be beneficial to the next patient. Theoretically, regions free from dust and vegetation should be the regions to prevent attacks of asthma. Sea voyages are sometimes beneficial and sometimes not. The decision as to whether or not benefit will be derived from certain regions may often be determined by a careful investigation into the condition of the patient's mucous membranes and the condition of his circulation.

Anything that would tend to make the circulation better in the mucous membranes of the upper air passages and diminish congestion and tumefaction of the mucous membranes of all the air passages will tend to prevent recurrences of asthma. Cardiac insufficiency, of course, should be properly treated, and whether the heart needs digitalis or the arteries need nitroglycerin or nitrites continuously, or whether the general good effect of ergot on the circulation is needed (and asthma may sometimes be prevented by ergot) must be determined by a careful study of the individual patient.

Insufficiency of the kidneys as a cause of asthma should be treated by the proper diet and the prevention, if possible, of nitrogenous toxemias. Such asthma is an indication of nitrogenous poisoning. The asthma due to gout is often best combated with thyroid, and when there is insufficiency of the thyroid in young individuals, which may be recognized by well-known signs, such as amenorrhea or scanty menstruation in women, an unusual and undesirable increase of fat, a dry condition of the skin, and a tendency to nitrogenous poisonings, the asthma will be benefited by small doses of thyroid, perhaps, coincidentally administered with small doses of iodid, as iodid has been shown to be the most active stimulant of the thyroid gland.

(To be Continued.)

New and Nonofficial Remedies

THE FOLLOWING ARTICLES HAVE BEEN TENTATIVELY ACCEPTED BY THE COUNCIL ON PHARMACY AND CHEMISTRY OF THE AMERICAN MEDICAL ASSOCIATION FOR INCLUSION IN THE PROPOSED ANNUAL, "NEW AND NONOFFICIAL REMEDIES." THEIR ACCEPTANCE HAS BEEN BASED LARGELY ON EVIDENCE SUPPLIED BY THE MANUFACTURER OR HIS AGENT, BUT TO SOME EXTENT ON INVESTIGATION MADE BY OR UNDER THE DIRECTION OF THE COUNCIL. CRITICISMS AND CORRECTIONS ARE ASKED FOR TO AID IN THE REVISION OF THE MATTER BEFORE FINAL ACCEPTANCE AND PUBLICATION IN BOOK FORM.

THE COUNCIL DESIRES PHYSICIANS TO UNDERSTAND THAT THE ACCEPTANCE OF AN ARTICLE DOES NOT NECESSARILY MEAN A RECOMMENDATION, BUT THAT SO FAR AS KNOWN IT COMPLIES WITH THE RULES ADOPTED BY THE COUNCIL.

W. A. PUCKNER, SECRETARY.

(A list of all accepted articles is published on an advertising page of THE JOURNAL *in the first issue of each month.*

(Continued from Vol. LI, page 1513.

BILE SALTS.[1]

The bile of man and of several animals contains in varying proportions the sodium salts of conjugated cholic acids; in ox and human bile especially glycocholate acid $C_{26}H_{43}O_6N$; and taurocholic acid, $C_{26}H_{45}O_7NS$. Fresh ox gall is said to contain about 3 per cent. each of sodium glycocholate and sodium taurocholate.

The sodium glycocholate and taurocholate may be separated in the following manner: Dry ox bile is treated with absolute alcohol and the tincture precipitated by ether in excess. Both salts are deposited and the glycocholate crystalizes upon standing, the taurocholate remaining in amphorous form, resembling oily or resinous matter. If the deposit is dissolved in water, solution of lead acetate will throw down a lead glycocholate, while the addition of lead subacetate to the remainder will precipitate the taurocholate (U. S. Dispensatory, p. 490).

Tests: All the bile acids respond to Pettenkofer's test. A small portion of the salt is dissolved in a little concentrated sulphuric acid in a small porcelain dish and warmed, care being taken that the temperaure does not rise higher than 60° to 70° C. A 10 per cent. solution of cane sugar is then added drop by drop while the liquid is stirred with a glass rod. If compounds of cholic acid are present a beautiful red color will appear, which does not disapear at room temperature, but usually in the course of a day becomes bluish violet. The red liquid shows in the spectrum two absorption bands, one at F and the other between D and E near to E. Care must be taken not to heat too much nor to add too much sugar. The sulphuric acid must be free from sulphurous acid and the lower oxides of nitrogen. As albumin, oleic acid, amyl alcohol, morphine, etc., may give a similar reaction, spectroscopic examination should not be omitted in doubtful cases (Hammarsten, Lehrbuch der physiolog. Chemie, p. 312).

Furfurol Test (Mylius): The substance is dissolved in alcohol and for every one cubic centimeter of the alcoholic solution, one drop of a 1:1000 furfurol solution and one Cc. of concentrated sulphuric acid are added and the mixture cooled, if necessary, so that the temperature may not rise too high. The same color reaction occurs as in Pettenkofer's test.

Actions and Uses.—The bile salts constitute the main active principles of bile, and therefore share the actions and uses of the latter, perhaps with the advantage of more constant composition. When injected into the circulation they cause severe nervous and cardiac depression, not observed when they are given by mouth. They are generally credited with a slight antiseptic and laxative action, with enhancing the efficiency of the resinous hydrogogue cathartics, and with emulsifying and hence favoring the absorption of fat. They stimulate the secretory activity of the liver, increasing both the fluids and solids of the bile; indeed, they are the most powerful, if not the only, cholagogues known.

They may be used in obstructive jaundice, although the rationale is somewhat doubtful; their use in biliary fistula is more reasonable, if the nutrition is noticeably affected.

BISMUTH AND IRON CITRATE (SOLUBLE) Wellcome Brand—Bismuthi et Ferri Citras, Wellcome.—A "scale salt" containing bismuth citrate and ferric citrate in amounts corresponding to from 38 to 40 per cent. each of the respective anhydrous salts (corresponding to 20 to 21 per cent. bismuth and 8.7 to 9.1 per cent. iron) the combination being rendered soluble in water by means of ammonia.

Bismuth and iron citrate (soluble) occurs in yellowish-green scales, readily soluble in water, having a saline, mildly ferruginous taste.

1. Under the general heading the several bile derivatives accepted for N. N. R. will be described.

A solution of bismuth and iron citrate (soluble) is acid toward litmus; addition of dilute acids or of ammonia water renders the solution darker but does not cause precipitation; addition of sodium hydroxide T. S. causes formation of a reddish-brown precipitate and evolution of ammonia.

The iron content of bismuth and iron citrate soluble may be determined by the methods prescribed for ferri et ammonii citras U. S. P. The amount of bismuth is determined by precipitating by hydrogen sulphide from an acid solution, dissolving the bismuth sulphide obtained in dilute nitric acid, precipitating the bismuth from this solution by ammonium carbonate and weighing as bismuth oxide.

Actions and Uses.—It has the properties of iron and soluble bismuth salts. Its administration is recommended when dyspepsia accompanies anemia, when the sedative action of bismuth is exerted on the digestive organs, while the iron produces its effects.

Dosage.—0.3 to 0.65 Gm. (5 to 10 grains).

Manufactured by Burroughs, Wellcome & Co., London and New York. Not patented or trade-marked.

ERGOTININE CITRATE—Ergotininæ Citras.—The citrate of ergotinine, a crystalline alkaloid, probably $C_{35}H_{40}O_5N_4$ (Barger and Carr) derived from ergot.

Ergotinine is obtained by extracting the residue left on evaporation of an alcoholic tincture of ergot with light petroleum to remove oily matter, dissolving the residue in ethyl acetate and shaking with citric acid solution. Sodium bromide or hydrobromic acid is then added and the precipitated hydrobromides of the alkaloids, ergotinine and ergotoxin are collected. The mixed hydrobromides are dissolved in caustic soda and shaken with ether; in this way ergotinine is removed first. Finally, the ergotinine is crystallized from alcohol, leaving ergotoxine and impurities in the mother liquor. By interaction of ergotinine with citric acid, ergotinine citrate is obtained.

Ergotinine citrate is a grayish-white, amorphous powder, slowly soluble in water; it has an acid reaction to litmus paper.

Ergotinine crystallizes in long needles, the sides of which are not quite parallel, which darken and melt at temperatures from 210° to 220° C. One part of ergotinine dissolves at 18° in 292 parts of alcohol, 1020 parts of absolute ether, in 91 parts of ethyl acetate, and is moderately soluble in acetone and benzene, and readily soluble in chloroform. It is insoluble in light petroleum and in water. Its specific rotation in alcoholic solution saturated in the cold is + 338°. It forms salts which produce colloidal solutions in water which are precipitated by electrolytes so that they are little soluble in the presence of the stronger mineral acids.

Tests: Ergotinine citrate when carefully decomposed by alkali, the mixture extracted with ether and the ether evaporated yields a residue which responds to the test for ergotinine. Solutions of ergotinine have a bluish violet fluorescence, especially when acidified. Concentrated sulphuric acid colors the alkaloid at first yellow, after some hours violet and at length blue. If a small quantity of ergotinine is dissolved in concentrated sulphuric acid and a trace of ferric chloride added, the mixture takes on an orange red coloration, which soon passes into red while the edges of the liquid are colored blue or bluish green.

If a few milligrams of ergotinine are dissolved in about 4 Cc. of glacial acetic acid a trace of ferric chloride added and the mixture underlaid with concentrated sulphuric acid a beautiful violet color appears at the junction of the two liquids.

Actions and Uses.—According to the investigations of Barger and Dale, ergotinine has very slight physiologic activity when it enters the system unchanged, but it is liable to be converted to a certain extent into ergotoxine, which possesses marked physiologic activity and appears to represent the pharmacologic actions of ergot. The action of ergotinine when given per os or when injected hypodermically, is variable in intensity but represents the action of ergot.

Ergotinine citrate can be used as a substitute for ergot, and is said to act efficiently, when injected hypodermically, in the treatment of headaches and of uterine hemorrhage. Combined with strychnine it is said to be useful as a stimulant in uterine hemorrhage.

Dosage.—.00033 to .00066 Gm. (1/200 to 1/100 grain), hypodermically.

Proprietary Preparations:

TABLOID ERGOTININE CITRATE—Tabloida Ergotininæ Citratis.—Each tablet contains ergotinine citrate 0.00033 Gm. (1/200 grain).

Dosage.—One or two, hypodermically.

Prepared by Burroughs, Wellcome Co., London and New York. U. S. Trademark on "Tabloid" Nos. 11,993; 43,563, 43,559; 43,569; 44,219.

TABLOID ERGOTININE CITRATE AND STRYCHNINE SULPHATE—Tabloida Ergotininæ Citratis et Strychninæ Sulphatis.—Each tablet contains ergotinine citrate 0.00065 Gm. (1/100 grain) and strychnine sulphate 0.0033 Gm. (1/20 grain).

Dosage.—One or two, hypodermically.

Prepared by Burroughs, Wellcome Co., London and New York. U. S. trademark, as for Tabloid Ergotinine Citrate.

FLUORESCEIN — Fluoresceinum. — Resorcinolphthalein (a term not strictly correct but commonly used), dioxyfluoran.—

Fluorescein, $O:(C_6H_3OH)_2:CC_6H_4COO = C_{20}H_{12}O_5$, is the anhydride of fluoresceinic acid $O:(C_6H_3OH)_2:C(OH).C_6H_4(COOH) = C_{20}H_{14}O_6$.

Fluorescein is prepared by the fusion of phthalic anhydride and resorcinol at 195-200° C. (383-392° F.) till the mass becomes solid. This is extracted with water and the residue dissolved in potassium hydroxide solution, which is then filtered and the fluorescein precipitated with acid.

Fluorescein is an orange red powder, insoluble in water, ether, chloroform, and benzol; soluble in hot glacial acetic acid and boiling alcohol. It dissolves in alkaline solutions with formation of a salt.

The alkaline solution by transmitted light is red; by reflected light it has a green fluorescence even in very dilute solutions. When fluorescein is boiled, with chalk and water, the calcium salt of fluorescein is formed which is recognized by its red brown color and green sheen.

Actions and Uses.—The soluble sodium salt of fluorescein (fluorescein 2 Gm., sodium bicarbonate 3 Gm., water to make 100 Cc.) has been used for the diagnosis of corneal lesions and detection of minute foreign bodies imbedded in the cornea. While a weak solution of fluorescein will not stain the normal cornea, ulcers or parts deprived of epithelium will become green and remain so for a time; foreign bodies will appear surrounded by a green ring; loss of substance in the conjunctiva is indicated by a yellow hue. Fluorescein also reveals defects of the endothelium of the cornea and produces a deep coloration of the cornea if the endothelium is absent or diseased.

Non-Proprietary Preparation:

TABLOID (OPHTHALMIC) FLUORESCEIN B.-W. & CO.

Each tablet contains 0.00026 Gm. (1-250 grain) fluorescein in combination with sodium, and weighs 0.0032 Gm. (1-20 grain). Prepared by Burroughs-Wellcome & Co., London and New York.

QUASSIN—Quassinum.—A bitter principle found in quassia.

The alcoholic extract of Jamaica quassia wood (Quassia U. S. P.) is neutralized with magnesia, then acidified with tartaric acid and the alcohol distilled off. The residue is shaken up with chloroform and the solution evaporated to syrupy consistency and dissolved in a mixture of equal parts of absolute alcohol and ether. This solution is evaporated and the residue dissolved in as little absolute alcohol as possible, the solution covered with a layer of ether and allowed to evaporate. The crystals which form are recrystallized from alcohol. The product thus prepared consists of two bitter principles α picrasmin ($C_{36}H_{44}O_{10}$) melting at 204° C. (399.2° F.) and β—picrasmin ($C_{36}H_{44}O_{10}$) melting at 209-212° C. (408.2 = 413.6° F.)

Quassin crystallizes in oblique rhomboidal needles with a pearly lustre. It is odorless but has a bitter taste. Its melting point is 210° C. (410° F.) and cooling it forms an amorphous mass. It is soluble in about 400 parts of water at 15° C. (59° F.), in 30 parts alcohol (85 per cent.) and in 21 parts of cold chloroform. It is very soluble in boiling alcohol, in acetic acid, and very slightly soluble in ethyl and petroleum ethers. It is soluble in concentrated acids and alkalies, but not in alkaline carbonates. Continued action of alkalies forms resins (Pharm. Francaise, 1908). It is dextrorotatory in its chloroform solution: 4.22 gm. in 100 Cc. chloroform rotating the plane of polarized light to the right with a specific rotation of plus 38° 8'. Solutions of quassin are neutral.

It dissolves to a colorless solution in concentrated sulphuric acid, which becomes red on the addition of sugar. (Pharm. Francaise, 1908.)

Actions, Uses and Dosage.—Bitter stomachic, 0.002 to 0.02 Gm. (1/30 to 1/3 grain) before meals.

Quassin (amorphous) is not identical with the above and should not be confounded with it.

POTASSIUM MERCURIC-IODIDE — Potassii Hydrargyroiodidum.—A complex salt formed by interaction of mercuric iodide with potassium iodide.

When mercuric iodide is added to an excess of potassium iodide solution a colorless liquid is obtained containing the mercuric iodide as a complex salt, approximately K_2HgI_4 (or $2KI+HgI_2$). Under suitable conditions (Naylor and Chappel Pharm. J., Mar. 7, 1908, p. 315) the salt having the composition $K_2HgI_4+3H_2O$ (or $2KI+HgI_2+3H_2O$) may be obtained in yellow needle-shaped crystals.

Potassium mercuric-iodide is deliquescent and is decomposed by water.

Actions and Uses.—The same as mercuric iodide, over which it is claimed to have some advantages because of its solubility.

Proprietary Preparation:

SOLOID MERCURIC POTASSIUM IODIDE.

Tablets said to contain in each tablet mercuric potassium iodide (potassium mercuric iodide) ($HgI_2.2KI = K_2HgI_4$) 0.113 Gm. (1.75 grains), an excess of potassium iodide, which prevents the decomposition of the potassium mercuric-iodide when water is added, and a trace of coloring matter.

Prepared by Burroughs Wellcome & Co., London and New York.

(*To be continued.*)

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

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[For other information see second page following reading matter]

SATURDAY, DECEMBER 19, 1908.

HEMOLYSIS IN CANCER.

It has long been a matter of common belief that the grave anemia and cachexia occurring in so many cases of cancer can not always be explained by the mere mechanical action of the tumor. Bard,[1] in 1901, having observed the frequent occurrence of hemolysis of corpuscles in cancerous pleural effusions, suggested that such hemolysis might well constitute a factor in the production of the cancerous cachexia. In recent years efforts have been made to clear up this matter of the toxicity of cancer by experiments; and the results, while still incomplete, are worthy of consideration, particularly those dealing with the hemolytic properties of tumor extracts and of the serum of sufferers from cancer.

The results obtained with tumor extracts with practical uniformity show the existence in them of hemolytic substances. Some investigators report positive results in all their cases, others in a considerable proportion. Weil[2] recently found no essential differences, beyond one of degree, between the extracts of non-necrotic tumors and those of certain normal organ extracts which have been known for some time to possess hemolytic powers. Necrotic tumors, however, yield a far more actively hemolytic extract, which differs from that of the non-necrotic tissues in greater simplicity of composition and probably also in stability to heat.

Of the contributions to the study of isohemolysis by serum of cancer patients, two of the most important are by Weil and Crile. Weil[3] attacked this phase of the subject by experiments on inoculable lymphosarcoma of dogs. He found that both the serum and the corpuscles of animals suffering from these tumors manifested departures from the normal, the former becoming distinctly more hemolytic, the latter more resistant to hemolysis. In cases of human cancer, however, he was not able to get such striking results. Forty per cent. (6 cases) of early and 56 per cent. (9 cases) of his cases of advanced cancer showed similar changes to those obtained in dogs with lymphosarcoma. He obtained a similar result in 1 of 3 cases of benign tumor, also in 11 of 43 cases of other diseases. He concludes therefore that the change can not be considered as pathognomonic of malignant disease, although he admits that it is much more frequently found here than in any other condition.

The results of Crile's[4] work, on the other hand, point more strongly toward the specificity of the reaction. He obtained isohemolysis in 130 of 153 cases of cancer, and this for the most part early in the disease; and hemolysis in 55 of 123 cases of miscellaneous diseases, including 48 of 52 cases of tuberculosis. Crile states, however, that the reaction of tuberculosis differs from that of cancer in that in the former cases normal serum hemolyzed the patients' corpuscles; this did not occur with cancer. With 211 normal individuals the results were negative.

Other observers, in the main, report less satisfactory results. Rosenbaum,[5] using the corpuscles of various animals, obtained positive results in 54 cent. of the carcinoma cases he tested. Kelling,[6] likewise using animal corpuscles, obtained hemolysis in 119 out of 265 cases of cancer, and in only 11 of 320 cases of other diseases. It is of interest that he obtained negative results in several cases of cancer of the pylorus, some of which later showed hemolytic activity after improvement in general condition following gastroenterostomy. This agrees with the fact observed by Crile that negative results not infrequently are obtained in cases of advanced cancer. More recently Fischel,[7] using Kelling's technic, obtained positive reactions in 2 of 4 cancer cases, but also in several cases of various other diseases.

It is evident from the foregoing that it is too early to ascribe an unqualified diagnostic value to the occurrence of hemolysis in cancer. The work, however, is of value in elucidating the phenomena of anemia and cachexia in cancer, and further investigation, with improvement in method and technic, may some day give us in the hemolytic power of the serum of cancerous patients a diagnostic reaction of great value.

1. Sem. méd., 1901, xxi, 202.
2. Jour. Med. Research, 1907, xvi, 287.
3. Jour. Med. Research, 1908, xix, 281.
4. THE JOURNAL A. M. A., Dec. 12, 1908, li, 2036.
5. München. med. Wchnschr., 1908, lv, 443.
6. Berl. klin. Wchnschr., 1907, xliv, 1355.
7. Berl. klin. Wchnschr., 1908, xlv, 882.

THE HARD PALATE IN NORMAL AND FEEBLE-MINDED INDIVIDUALS.

The conclusion that idiocy and degeneracy are especially marked by deformities of the palate has been widely accepted. This proposition was sustained by Dr. J. L. Down, who was at the head of Earlswood Asylum for the Feeble-Minded in England. By measurement he found a narrow and high palate so common that he concluded that these characteristics were peculiar to persons imperfectly developed intellectually. That there was some reason to doubt this conclusion was shown by N. W. Kingsley, an American dentist, who took the pains to re-examine the mouths on which Dr. Down had based his conclusions. In a paper published in 1875 Kingsley said: "About 2 per cent. might be said

to be pronounced cases of narrowed or V-shaped arches, and another 5 to 10 per cent. might be said to have more or less tendency in that direction; but of the more positive cases I did not see one so marked as I have seen and treated in private practice and associated with full intellectual development."

The refutation by Dr. Kingsley failed, however, to be received as final, and investigation by other workers seemed to sustain the opinion of Dr. Down. The theory of stigmata of degeneracy became popular, and it was generally accepted that the narrow and high palate was one of the stigmata. Dr. Walter Channing undertook to investigate the subject and in 1897 published his results, arriving at the following conclusions:

1. Two-fifths of the palates of idiots are of fairly good shape. 2. Palates of normal individuals may be deformed. 3. The difference between the palates of idiots and those of normal individuals is one of degree and not of kind. 4. In either case deformity of the palate shows irregular development anatomically. 5 Palates of average children and those of idiots, under 8 years of age, probably do not in the majority of cases differ markedly. 6. There is no form of palate peculiar to idiocy. 7. The statement that a V-shaped or other variety of palate is a stigma of degeneracy remains to be proved.

To test this matter more fully, Channing and Wissler[1] have measured a large number of casts of the mouths of both normal and pathologic individuals, using the principles of anthropometry. They attempt to distinguish by mathematical formulas and statistical tables between differences due to real and those due to accidental variations. Exact measurements are made to take the place of mere inspection, a quantitative method being substituted for the ordinary qualitative one.

The results of the examination show a slight difference in degree but not in the kind of variability between the normal and the feeble-minded. While the palates of the feeble-minded exhibit somewhat greater variability, the variations are seen to be about equal in both directions from the average, thus failing to substantiate the assumption that the palates of the feeble-minded are relatively narrow. Finally, all the differences in size discovered by Channing and Wissler are too small to be detected by the eye and are of no clinical value. The results suggest that the differences in variability shown for the feeble-minded are due to a general retardation effect during the first few years of life.

COMBINING CLINICAL AND LABORATORY WORK.

The opening of the new laboratory of experimental medicine and the inauguration of a new chair in that subject at Western Reserve University form a notable event in the development of medical research and education. For many years the dominant tendency of medicine has been toward specialization. The rapid advance, both of the fundamental medical sciences and of the practical arts of medicine and surgery, has to a great extent been rendered possible only by this ever-increasing specialization. But the time has come—and this fact is recognized by all—when this minute subdivision of knowledge and of effort, so admirably an instrument of progress up to a certain point, threatens to separate our science into a number of isolated fields, each known only to its own cultivators, and especially to hinder those fundamental studies, sometimes inappropriately called "theoretical," from those designated by a superficial antithesis the "practical" branches.

It is as vain to hope as it would be unwise to desire that the investigator, in the one field or in the other, should cease to specialize. He must specialize in order to discover new truth. The only antidote to excessive specialization is to provide the means of synthesis. It is the aim of such a laboratory as is here referred to to aid in this synthesis, to do something toward bridging the gap between laboratory and clinical work, primarily as regards investigation, but also in relation to the instruction of students. To better accomplish it—and this is a matter of peculiar interest and importance—a definite official contact with clinical material in one or more of the local hospitals is to be assured to the laboratory staff by the appointment of the director and possibly of other members of the staff to clinical positions. In this way it is hoped to provide for the exact clinical study of selected groups of cases, combined with experimental study not only of material obtained from the cases but also of the clinical phenomena so far as they can be reproduced or elucidated by simultaneous investigations on animals.

It is this definite association of the laboratory with the hospital which constitutes the special feature of this new foundation and defines its special field. The field of medical teaching will profit by the creation of more laboratories of this very sort. We now possess a not very small and a growing number of clinical laboratories of experimental pathology and institutes for medical research. The Cushing laboratory at Cleveland is not merely an addition to this important, and, indeed, indispensable group. It is not, for example, intended to be a miniature of the Rockefeller Institute at New York, for it is an integral part of a medical school and intimately related to the hospitals associated with that school. It will not usurp the functions of the clinical laboratory, for its special office will not be the examination, chemical, histologic or bacteriologic, of material for purposes of diagnosis. Nor will it encroach on the domain of the laboratory of experimental pathology, properly so-called, for it will not, in general, undertake the investigation of problems of diseased function as laboratory problems alone. It is the definite and system

1. Channing, Walter, and Wissler, Clark: The Hard Palate in Normal and Feeble-Minded Individuals. Anthropological Papers of the American Museum of Natural History. I, part 5. Paper. Pp. 349, with illustrations. Price, $0.50. New York: Published by Order of Trustees.

atic association of the experimental with the clinical work which constitutes the distinctive note of the new departure, and it is chiefly this which renders it so interesting and promising a venture.

THE DOCTRINE OF LYMPHATIC PERMEATION IN CANCEROUS METASTASES AND ITS SIGNIFICANCE FOR RADICAL OPERATIONS.

Few contributions to medical knowledge should meet with a more cordial reception than one increasing the brightness of the ultimate prognosis in operations for cancer of the breast. Such a contribution seems to exist in the researches of W. Sampson Handley[1] on the "modes of dissemination of breast cancer metastases."

The only hypothesis which has gained wide acceptance as an explanation for cancer metastases in the parietes and viscera is that which attributes the secondary growths to a transmission to distant parts of cancer emboli, which have reached the blood stream through the lymphatics or by direct invasion of a vein. But, if cancer metastases are the result of embolic dissemination, how do the lungs ever escape? Why are the liver and the skeletal system so frequently the seat of secondary growths, while the spleen is relatively immune? These and other equally poignant objections have long rendered the embolic hypothesis untenable for many observers; it appears to have survived merely in default of a more worthy successor.

Handley, from a careful clinical, macroscopic and microscopic study of cancer dissemination, concludes that, while blood embolism may occasionally be responsible for secondary growths, it is, comparatively speaking, a negligible factor, the real danger being a progressive permeation by cancer cells of the lymphatic vessels which lie just superjacent to the deep fascia. This vast lymphatic system, which may be termed the fascial lymphatic plexus, is coextensive with the body, receiving vertical tributaries from the skin and from the tissues subjacent to the deep fascia. In a convincing way Handley has shown that the permeation of this lymphatic meshwork by growing cancer cells is the true explanation of metastatic cancer. The growth of the cancer cells along the lymphatics is not alone in a horizontal direction, but they permeate upward through the skin tributaries, forming cutaneous nodules, and downward through the deep connections, producing visceral metastases.

It is impossible to speak here of the many interesting details of the author's work, but the immense practical bearing of his conclusions on the operation for breast cancer and on the ultimate prognosis is obvious. The surgical indications are clear. Since dissemination takes place along the deep fascial lymphatic plexus by a process of permeation, an operation for breast cancer should and does include not only a liberal removal of skin, but also a widespread removal of the adjacent deep fascia.

1. Cancer of the Breast and Its Operative Treatment. London, 1906.

LETTER BROKERS AND THE CONFIDENCES OF THE GULLIBLE.

Our exposure of the Epileptic Institute Company of Cincinnati in THE JOURNAL, Nov. 28, 1908, called attention once more to the close relation between the letter brokerage business and advertising quacks. Kalmus, the promoter of the Epileptic Institute, made a practice, the report said, of "purchasing the names and addresses of epileptics from the Guild Company of New York." This is but another concrete instance of the fact that people who are foolish enough to confide in these advertising quacks are not only "squeezed" for all that can be got out of them, but that insult is added to injury. The confiding patient, sooner or later, realizes that he has been fleeced. Then, being commercially valueless to the quack who has robbed him, his name and address and the letters he has written are sold to agencies that make a business of reselling or renting out such good gullible material for kindred frauds to prey on. We have in our possession a list of letters for rent by this same Guild Company, containing communications on such subjects as syphilis, female complaints, drug habits, alcoholism, etc., addressed by sufferers to various advertising quacks. These letters assuredly were written under the belief, and doubtless often under the direct assurance, that the writer's private and personal confidences would be closely guarded. It can hardly be supposed that the misguided sufferers would have laid bare the most intimate of personal details had they supposed that their letters would be not only handled and read by sundry people, but let out on hire to any quack who will pay the price. Yet it is by this means that the gullible sick are bombarded with circulars regarding their illnesses, in which the advertisers "have become interested" through the tender solicitude of some mysterious "friend."

FOOTBALL CASUALTIES.

Reformed football, judging from the results of the late season, seems to be about as fruitful in serious accidents as it was before the change of rules, which, it was supposed, would render the game less objectionable in this respect. The reported cases of broken arms, legs, ribs, collar bones, etc., are more numerous than they were last season, and while it is too early yet to reckon the fatalities, since in many cases death is not immediate, the number is still a formidable one, considering the fact that at the most the number of participants in the game is comparatively small. One game is reported in which seventeen players had to be removed unconscious from the field, five of them injured so severely as to require hospital care. There is evidently need for more improvement.

V 51 1908

Medical News

CONNECTICUT.

Society Meeting.—At the semi-annual meeting of New Haven County Medical Association, the followng officers were elected.: Dr. William J. De Laney, Naugatuck, president; Dr. Frank N. Loomis, Derby, vice-president; Dr. William S. Barnes, New Haven, clerk (re-elected); Dr. Charles S. Rodman, Waterbury, member of executive committee (re-elected); and Drs. Norton R. Hotchkiss, New Haven, Henry G. Anderson, Waterbury, and Edward W. Smith, Meriden, censors.

Against Contract System.—The Bridgeport Medical Society, at a meeting November 17, took action to prevent its members from making contracts with fraternal organizations to treat members on a per capita basis. A resolution was adopted whereby the by-laws were amended to take effect January 1, prohibiting any member of the society from holding a contract with any fraternal organization, and members of the association will be prohibited from consulting with contract physicians after that date.

ILLINOIS.

Psychopathic Hospital to be Recommended.—The citizens' committee, which recently investigated the Cook County Hospital for the Insane, Dunning, in its official report, recommends the establishment of a psychopathic hospital, where patients can be treated before being committed to the state hospitals.

Personal.—Dr. John C. Gunn, Bellville, has returned after six months abroad.——Dr. Charles F. Read, Genvea, has been appointed assistant physician in the Illinois Eastern Hospital for the Insane, Hospital.——Dr. William B. Peck, Freeport, who has been abroad for a year, is expected to return and resume practice early in January.

Chicago.

Personal.—The condition of Dr. Sarah Hackett Stevenson, who has been ill for a long while in St. Elizabeth's Hospital, is reported to be critical.——What is supposed to have been a bomb was thrown into the automobile of Dr. Merritt O. Hoover, an official of the health department, December 7. Dr. Hoover is said to have admitted that he had received several threatening letters prior to this occurrence.——Dr. Joseph Springer has been appointed coroner's physician, vice Dr. Otto W. Lewke, resigned.——Dr. Edmund J. Doering has returned from England.

Mortality of the Week.—During the week ended December 12, 537 deaths were reported to the Department of Health, 17 more than for the preceding week and 57 fewer than for the corresponding week of last year, the respective annual death rates per 1,000 being 12.92, 12.52, and 14.70. Pneumonia caused 79 deaths; heart diseases, 57; consumption, 53; violence (including suicide), 38; acute intestinal diseases, 33; cancer, 31, and nephritis, 30; while of the chief communicable diseases there were 23 deaths due to diphtheria; 14 to scarlet fever; 5 to measles, and 2 to typhoid fever. There was a marked reduction in the deaths from impure air diseases, which were 44 fewer than for the corresponding week of 1907.

Contagious Diseases.—The chief medical inspector gives a brief summary of the contagious disease situation for the week ended December 12. During the week 867 cases were reported to the department, distributed as follows: Diphtheria, 222; scarlet fever, 213; chickenpox, 132; measles, 98; tuberculosis, 82; typhoid fever, 47; pneumonia, 26; whooping cough, 21; and diseases of minor importance, 26. Compared with the preceding week there were 30 more cases each of diphtheria and scarlet fever, 39 more of chickenpox, and 12 more of whooping cough. During the week the medical inspectors excluded 442 out of 12,227 pupils examined on account of contagious diseases. The principal causes of exclusion were: Diphtheria, 5; contacts, 23; scarlet fever, 11; contacts, 11; measles, 7; contacts, 14; chickenpox, 52; contacts, 19; whooping cough, 1; contacts, 2; mumps, 12; contacts, 3; tuberculosis, 3; tonsillitis, 104; pediculosis, 46; favus, 2; scabies, 15; impetigocontagiosa, 60; ring worm, 17, and conjunctivitis, 8.

INDIANA.

Personal.—Dr. Edgar C. Loehr, Noblesville, has been reappointed secretary of the Hamilton County Board of Health.——Dr. Francis M. Ihrig, Goshen, has been re-elected secretary of the Board of Health of Elkhart County.——Dr. Frederick W. Shaley, Terre Haute, has succeeded Dr. Maurice B. Van Cleave as secretary of the Vigo County Board of Health.——Dr. Henry W. Held, Vincennes, who has been seriously ill, is reported to be imporving.——Dr. J. Willard Parrish, Shelbyville, is reported to be seriously ill with appendicitis.——Dr. Lorin W. Smith, Wabash, who was recently operated on for septicemia, is reported convalescent.——Dr. George T. MacCoy, Columbus, has been appointed a member of the State Board of Health.——Dr. William O. Gross has been elected secretary of the Hope Hospital Association, Fort Wayne.——Dr. Leopold Heimann, Evansville, has returned from Europe.

IOWA.

Sanatorium Cornerstone Laid.—The cornerstone of the new state sanatorium at Nevada, was laid November 11, with impressive ceremonies.

Itinerants Refused License.—At the October meeting of the State Board of Medical Examiners, itinerant practitioners' licenses were refused to Drs. Wilbur, W. E. and J. F. Shallenberger. The board announces that there are in Iowa only two itinerant practitioners, Drs. B. A. Stockdale and A. H. Weber.

Personal.—Dr. Charles J. Plonske, Bancroft, has returned after a year abroad.——Dr. William E. Sanders, Alta, has returned after two years abroad and has accepted a voluntary assistantship in Johns Hopkins Medical School, Baltimore.——Dr. Rosa M. Upson Liebig, Marshalltown, has been appointed overseer of the poor.——Dr. Alexander W. Trout, Perry, was struck by a locomotive recently, and seriously injured.

KENTUCKY.

Correction.—In THE JOURNAL of September 12, was printed a death notice of Dr. Manuel H. Davis, Mays Lick. This notice was incorrect, as Dr. Davis is reported to be alive and in good health, and in active practice. The information on which the notice was based was the September, 1907, number of the *Louisville Medical Journal*, which noted the death of "Dr. M. A. Davis of Mayslick," but evidently referred to the late Dr. James D. Davis of Maysville.

Epidemic Diseases.—The secretary of the State Board of Health announces that smallpox has existed in Hopkins county for several weeks. There is no isolation hospital in the county and the disease has spread until it is reported that there are about 25 cases in Madisonville and others in many of the mining towns in the county. Negroes are chiefly afflicted. A contract has been awarded for the erection of an isolation hospital near Madisonville for white patients, and another will be built and used for colored patients.——Typhoid fever is reported to be epidemic in Georgetown, and on this account Georgetown College has been closed until January 5.

MASSACHUSETTS.

Osteopath Convicted.—John A. Taff, an osteopath of Boston, formerly of Louisville, Ky., charged with practicing medicine without being registered as a physician, is said to have been sentenced to imprisonment for three months in the House of Correction.

Medical Club Election.—At the annual meeting of the Brookfield Medical Club, held in West Brookfield, November 18, the following officers were elected: President, Dr. Albert F. Peck, Spencer; vice-president, Dr. Lawrence T. Newhall, Brookfield; secretary-treasurer, Dr. William J. Heffner, Gilbertville, and executive committee, Drs. Maurice W. Pearson, Ware, Charles A. Blake, West Brookfield, and Albert H. Prouty, North Brookfield.

Against Tuberculosis.—The Northampton Tuberculosis Association, at its annual meeting, elected Dr. Albert M. Belden president.——At the meeting of the Antituberculosis Association, held recently in Quincy, the following officers were elected: President, Dr. John F. Welch; vice-presidents, Drs. Henry C. Hallowell and John A. Gordon; secretary, Dr. Walter L. Sargent; members of the board of managers, Drs. Nathaniel S. Hunting, Willis J. Middleton, Daniel B. Reardon, John T. Reynolds and Elmore R. Johnson.

Free Medical Lectures.—Beginning January 3, there will be given at the Harvard Medical School, on Saturdays at 8 p. m., and on Sundays at 4 p. m., the second annual series of thirty-two free public lectures. The dates, subjects and speakers are as follows:

Jan. 3.—"Fifty Years of Surgery: A Review," by Dr. David W. Cheever, '52.
Jan. 9.—"Some Things Parents Should Know About the Teeth of Their Children," by Dr. Charles A. Brackett, '73.
Jan. 10.—"Anatomical Variations," by Dr. Thomas Dwight, '66.
Jan. 16.—"Auditory Vertigo: Deafness Due to Ear Disease," by Dr. Clarence J. Blake, '65.

Jan. 17.—"Inflammation." by Dr. William T. Councilman, hon., '90.
Jan. 23.—"Diphtheria and Scarlet Fever," by Dr. John H. McCollom, '89.
Jan. 24.—"The Circulation of the Blood," by Dr. William T. Porter.
Jan. 30.—"On the Work for the Relief of the Sick of Various Agencies Other Than Medical," by James J. Putnam, '66.
Jan. 31.—"Rabies (illustrated)," by Dr. Langdon Frothingham, '89.
Feb. 6.—"Curvature of the Spine, and School Life," by Dr. Edward H. Bradford, '69.
Feb. 7.—"Methods of Testing the Acuteness of Vision and Color Perception," by Dr. Charles H. Williams, '71.
Feb. 13.—"Psychotherapy: Its Use and Abuse." by Richard C. Cabot, '89.
Feb. 14.—"Infantile Paralysis and Its Treatment," by Dr. Edward H. Bradford, '69.
Feb. 20.—"The Teeth of Public School Children: How Related to the Children's General Health and Development," by Dr. William H. Porter, '78.
Feb. 21.—"Psychotherapy: Its Use and Abuse (II.)," by Dr. Richard C. Cabot, '89.
Feb. 27.—"A Study of the Inoculable Tumors of Mice, with Special Reference to Heredity (illustrated)," by Dr. Ernest E. Tyzzer, '02.
Feb. 28.—"The Hygiene of Pregnancy (to women only)," by Dr. Charles M. Green, '74.
March 6.—"Glucose," by Dr. Lawrence J. Henderson, '98.
March 7.—"Pneumonia," by Dr. Elliott P. Joslin, '95.
March 13.—"Feeding and Its Relation to the Infant's Development," by Dr. John L. Morse, '87.
March 14.—"School Life and Its Relation to the Child's Development," by Dr. Thomas M. Rotch, '01.
March 20.—"Some Facts as to Disease of the Heart," by Dr. Henry Jackson, '80.
March 21.—"The Relation of Gastroenteric Conditions to the Development of Early Life," by Dr. Charles H. Dunn, '96.
March 27.—"Mental Hygiene in the School and Home," by Dr. Samuel A. Hopkins.
March 28.—"State Work in Tuberculosis," by Dr. Arthur Tracy Cabot, '72.
April 3.—"The Work of the Boston Consumptives' Hospital," by Dr. Edwin A. Locke, '01.
April 4.—"Psychotherapeutics," by Dr. Philip C. Knapp, '78.
April 10.—"The Diagnosis and Prognosis of Surgical Affections, with Special Reference to Their Early Detection and Treatment," by Dr. Maurice H. Richardson, '73.
April 11.—"Progress in the Treatment of Cancer," by Dr. James G. Mumford, '85.
April 17.—"Good and Evil Results of Athletics," by Dr. Edward H. Nichols, '86.
April 18.—"The Artificial Illumination of Schoolrooms," by Dr. Myles Standish, '79.
April 24.—"Athletic Sports at Various Ages and Their Probable Results on the Body," by Dr. J. Bapst Blake, '87.
April 25.—"Louis Pasteur," by Dr. Harold C. Ernst, '76.

NEBRASKA.

New Infirmary.—The Franciscan Brotherhood of Poor St. Clares is erecting an infirmary at Twenty-ninth and Hamilton streets, Omaha, at a cost of $31,000.

Society Election.—The Highline Medical Society of Phelps county has elected Dr. William A. Schreck, Bertrand, president; Dr. G. E. Charton, Moorefield, vice-president; and Dr. Alfred E. Reeves, Farnam, secretary-treasurer.

Personal.—Dr. Frederick J. Wearne, Omaha, has gone to Europe.——Dr. Archibald G. Fletcher, Orchard, has decided to enter the missionary field and expects to go in a short time to Corea or China.——Dr. H. H. Blodgett has been made assistant to Dr. Emanuel S. Wenger in the Burlington medical department, Lincoln.

NEVADA.

State Society Election.—At the annual meeting of the Nevada State Medical Associaton, held in Reno, November 10 and 11, the following officers were elected: President, Dr. John A. Lewis, Reno; vice-presidents, Drs. George F. Pope, Battle Mountain, and Walter W. Ryan, Goldfield; and secretary-treasurer, Dr. Sidney K. Morrison, Reno. Resolutions were drafted and sent to the Nevada senators and congressmen, appealing to them to do all in their power to support the policy of President Roosevelt regarding a national health bureau, and calling their attention to the Committee of One Hundred, which, through its chairman, Dr. J. N. McCormack, will bring this before Congress in the near future.

NEW YORK.

Presentation to Dr. Park.—Students of the senior class of the Medical Department of the University of Buffalo, presented Dr. Roswell Park with a silver service in honor of his completion of a quarter of a century as professor of surgery in the institution.

Optometry Rules Approved.—Rules governing the practice of optometry were approved on December 10 at a meeting of the regents of the university, Albany. The regulations affecting the examination of applicants are along the lines of those prescribed by the recently enacted law. It was provided that the minimum time in registered schools should, after a reasonable time, be two years. Students in any of the schools now in existence will be eligible to try the tests next January.

Personal.—Dr. Renwick R. Ross, superintendent of the Buffalo General Hospital, has declined the superintendency of Bellevue Hospital.——Dr. Russell B. Lynn, Waverly, has sailed for Vienna.——Dr. Charles G. Child, Jr., New York City, has been appointed visiting gynecologist to the City Hospital.——Dr. Hiram B. Manchester has been elected town physician of Batavia.——Dr. Earl G. Danser, Buffalo, has been appointed medical examiner, and Dr. John D. Howland, Buffalo, assistant medical examiner of Erie county.——Dr. Herbert W. Williams, Buffalo, sustained painful injuries in an automobile accident recently.

Vital Statistics.—The returns of deaths for October show a slight decrease as compared with last year. There were reported 10,880 deaths, equivalent to an annual death rate of 15.3 per 1,000, while the rate for October, 1907, was 16.6 per 1,000. There were 169 deaths from typhoid fever, 55 more than for October, 1907, and 32 fewer than for a five year's average for the month. Deaths from measles and diphtheria decreased from 34 and 195 to 13 and 172 respectively. Pulmonary tuberculosis caused 4 more deaths than in October, 1907, and 6 more than the average for five years. Malignant disease shows an increase of 61, as compared with last year. Diseases of the nervous system caused 896 deaths, or 287 fewer than for last year. There were 148 deaths from suicide, 15 from homicide, and 424 from accidents.

State Sanitary Officers in Convention.—The eighth annual conference of the sanitary officers of the state was held in Albany on December 1, 2 and 3. At the opening session Dr. A. H. Garvin of the New York State Hospital for the Treatment of Incipient Pulmonary Tuberculosis at Raybrook gave a clinical demonstration of the various measures employed in the diagnosis of incipient tuberculosis. Dr. Alec H. Seymour, secretary to the State Department of Health explained the new law relating to the registration of tuberculosis cases and Dr. Eugene H. Porter told of the results of the work of the state department and the plans that were under way for relieving water pollution in the future. On the second day, Governor Hughes received the delegates to this convention and made an address. The problems of pure water and pure milk were discussed. A few interesting facts were brought out in regard to vital statistics. New York State has a higher death rate than Maryland, Colorado, Maine, Connecticut, New Jersey, Vermont, New Hampshire, Pennsylvania or Massachusetts, but a lower death-rate than Rhode Island and perhaps California. The death rate of New York City has decreased steadily and rapidly since 1872, but is still higher than that of London, Paris or Berlin. The birth rate of New York State, if statistics are correct, is lower than that of any other state except Michigan.

New York City.

Gift for Hospital.—The Hospital for Deformities and Joint Diseases has just received $5,000 as the net proceeds of a bazaar.

Parks Should Have Dairies.—The agitation for dairies in the various city parks has resulted in raising by subscription over $1,500 for this purpose.

Harvey Society Lecture.—The sixth lecture on the Harvey Society course, delivered by Prof. A. B. Macallum of the University of Toronto, on December 19, at the Academy of Medicine, is on the subject of "Osmosis."

The Tuberculosis Exhibit.—Because of the full attendance at this exhibit, the Sunday closing hour will be 10 p. m. instead of 1 o'clock as in the past. On December 6 thousands were turned away after the closing at 5 p. m.

Health Lectures.—The Board of Education is presenting a course of health lectures at the different public schools. These lectures treat of subjects such as the care of the teeth and skin, and suggestions in regard to the prevention of tuberculosis.

Needs Appropriation.—Dr. Darlington has asked the Board of Estimates and Apportionment for an appropriation of $52,000 to pay 100 physicians and 200 nurses employed by the Department of Health in the bureau of school hygiene for the medical inspection of school children.

Tuberculosis Wards Few.—There is a general lack of accommodations for tuberculosis patients in all the city hospitals. The contract for a second building for the new tuberculosis infirmary, which is an addition to the Metropolitan Hospital on Blackwell's Island, has been left. According to the estimates the new building will cost about $290,000, and will have a capacity of 224 beds.

Contagious Diseases.—There were reported to the sanitary bureau for the week ended December 5, 574 cases of tuberculosis, with 153 deaths; 385 cases of diphtheria, with 39 deaths; 271 cases of measles, with 10 deaths; 221 cases of scarlet fever, with 7 deaths; 77 cases of typhoid fever, with 11 deaths; 37 cases of whooping cough, with 1 death; 5 cases of cerebrospinal meningitis, with 1 death; and 179 cases of varicella, a total of 1,749 cases and 222 deaths.

The Opening of the Tuberculosis Exhibit.—The tuberculosis exhibit was opened November 30 by Mayor McClellan and addresses were made by Health Commissioner Darlington, Robert W. de Forest, president of the Charity Organization Society; Henry F. Osborn, president of the Museum of Natural History; Dr. Abraham Jacobi, and others. The mayor announced that there were at present about 3,500 beds available for tuberculosis patients in the public and private institutions of the city, and buildings were in the course of construction, or have been planned, which will accommodate nearly 1,500 more. Eventually the present plans provide for 6,000 patients. The large crowds attending the exhibition bear witness to the fact that the public is deeply interested. There are a series of meetings especially for physicians, among them a mass meeting of physicians, which was held on Friday evening, December 4, at which Dr. Herman M. Biggs presided. Dr. Darlington has announced that since the department of health has begun its campaign against spitting and has removed advanced cases of tuberculosis to hospitals, furnished sputum cups, and enforced disinfection of rooms vacated by persons suffering from consumption, the death rate from that disease among children under 15 years of age has fallen from 7.1 for each 10,000 of population to 2.6.

NORTH CAROLINA.

Personal.—Dr. Edward R. Michaux, Greensboro, has resigned as medical director of the Security Life and Annuity Company, and will resume private practice. Dr. J. Pinkney Turner, assistant medical director, has succeeded him.——Dr. Ephraim M. Brevard, for several years in practice in Tallahassee, Fla., will return to Charlotte, January 1, and resume practice.

Society Meeting.—At the annual meeting of Mecklenburg County Medical Society, held in Charlotte December 1, the following officers were elected: President, Dr. Annie Laurie Alexander; vice-presidents, Drs. Robert Lafferty and Simril M. Henderson, and secretary, Dr. Leone B. Newell, all of Charlotte.——The Highpoint Academy of Medicine, at its annual meeting December 2, elected Dr. John T. Burrus, president; Dr. Claude E. Reitzel, vice-president, and Dr. G. F. Duncan, secretary-treasurer.

OHIO.

New Building for University.—Cincinnati University is to have a new building for the College of Medical Sciences to cost $275,000, besides $25,000 for equipment.

Cincinnati.

Fight for Pure Milk.—A new step in the fight for pure milk was taken when the Board of Health ordered the dairy stable of Henry Sielkop to be vacated. It is said that a number of other insanitary stables are to receive similar treatment. The milk commission has put under bonds of $500 each five producers and dealers not to sell milk from cows fed on distillery waste. Ten other producers and dealers were each fined $50 and costs.

"Patent Medicine" Prescribers.—At the annual meeting of the Ohio Druggist's Association, held November 24, war was declared on those physicians who prescribe "patent medicines." The druggists declared that the percentage of prescriptions of this nature has become so large that should it continue it would be only a matter of a short time until druggists would be reduced to the position of clerks who "buy large bottles from manufacturers and fill small bottles for the doctors." Edward Noes, Jr., received the unanimous endorsement of the association for membership on the State Board of Pharmacy.

Miami Alumni Election.—At the regular monthly meeting of the Cincinnati chapter of the Miami Medical College Alumnal Association, held November 27, the following officers were elected: President, Dr. John A. Caldwell; secretary, Dr. J. Edward Pierring; and treasurer, Dr. William C. Herman.

PENNSYLVANIA.

Philadelphia.

Tuberculosis Exhibition.—Plans have been completed for the Tuberculosis Exhibition to be held in this city for one month, beginning February 1 and continuing one month. The exhibition will be composed largely of the material exhibited at the recent International Tuberculosis Congress in Washington. Among the individual exhibits are eight which received from the Congress prizes ranging in value from $100 to $1,000. Besides these, 44 of the exhibits received gold medals, and 43 silver medals. The exhibit is unique, not only in the fact that it is the greatest of its kind ever gathered together, but also because this demonstration, collected for a purely educational purpose, is used to illustrate the dangers of only one disease.

Health Report.—The total number of deaths reported to the Bureau of Health for the week ended December 12, was 469. This is a decrease of 55 from the previous week and of 99 from the corresponding week of last year. The principal causes of death were: Typhoid fever, 12; diphtheria, 10; consumption, 53; cancer, 29; diabetes, 4; apoplexy, 18; paralysis, 5; heart disease, 47; acute respiratory diseases, 60; enteritis, 23; hepatic cirrhosis, 6; appendicitis, 5; acute nephritis, 7; Bright's disease, 38; premature birth, 11; congenital debility, 8; senility, 5; suicide, 6; accidents, 25; and marasmus, 3. There were 199 cases of contagious diseases reported, with 26 deaths, as compared with 197 cases and 24 deaths reported in the preceding week.

Foes of Nostrums Meet.—Four hundred and fifty druggists and physicians attended a banquet and "getting together meeting" at the Columbia Club, December 9, for the purpose of discouraging the use of nostrums by the public and the prescribing of these agents by the physicians. The meeting was addressed by Dr. Albert M. Eaton, president of the county medical society, and Drs. G. Morton Illman, A. B. Hirsch, Frederick A. Sutliff. Dr. Eaton claimed that the public school should be made available for the education of the public against the use of dangerous proprietary medicines. He said that pharmacists and physicians should be allowed to visit the schools and deliver short plain talks on the dangers of nostrum dosing. He also advocated the introduction of lectures against the prescribing of nostrums into the study course of the senior classes of medical colleges.

Medical Society's Attitude Defined.—At a recent meeting of the Philadelphia County Medical Society, the following resolution, concerning the action of the outside schools, was adopted:

"WHEREAS, willful misstatements by certain interested elements in the community throw an incorrect light on the attitude of and are evidently intended to interfere with the regular medical profession in its efforts to protect the public by suppressing medical criminals and illiterates, be it

"*Resolved*, That the Philadelphia County Medical Society, as the exponent of the recognized profession in this teaching center, declares its belief in the right of a physician to use mental, chemical, mechanical, electrical, manipulative, dietetic or any other legitimate means of treating disease; the same holds true of dosage, small or large. Furthermore, the society embodies the modern spirit as to professional fellowship, and points with pride to its record for broad-minded liberality in election to its membership. Graduates of various 'schools' of practice have been and are now on its rolls."

SOUTH CAROLINA.

Medical Scholarships.—The governor of the state has awarded scholarships in the Medical College of the State of South Carolina as follows: W. U. O'Bryan, Manning; J. H. Cannon, Ridgeland; E. E. Epting, Williamston; John M. Beardon, Enoree; Phillip W. Hunter, Yorkville; Floyd D. Rogers, Lake City; and George H. Hennies, Columbia.

Society Meetings.—At the annual meeting of Lexington County Medical Society, held in Lexington, October 5, Dr. William L. Kneece, Baxter, was elected president; Dr. Rufus E. Mathias, Irmo, vice-president, and Dr. James J. Wingard, Lexington, secretary (re-elected).——The annual meeting of Laurens County Medical Association was held in Laurens November 26, when the following officers were elected: Dr. Samuel F. Blakely, Ora, president; Dr. Dorroh H. Ferguson, Laurens, vice-president; Dr. Jesse H. Teague, Laurens, secretary; Dr. Absalom J. Christopher, Laurens, treasurer, and Drs. Samuel F. Blakely, Ora, and William H. Dial, Laurens, delegates to the state association.

SOUTH DAKOTA.

Typhoid Epidemic.—Reports from Clear Lake tell of an alarming epidemic of typhoid fever, for which no cause has as yet been determined.

Election.—At the annual meeting of the Black Hills Medical Association, held in Deadwood, November 15, the following officers were elected: President, Dr. Alfred G. Allen, Deadwood; vice-president, Dr. Adolph M. Giffin, Rapid City; secretary, Dr. Felix E. Ashcroft, Deadwood; treasurer, Dr. Walter L. Vercoe,

Lead, and censors, Drs. C. W. Hargens, Hot Springs, and John W. Freeman, Lead.

TENNESSEE.

Dispensary in Police Station.—Under direction of Dr. James L. Andrews, president of the board of health of Memphis, a room in the police station is to be fitted up as a dispensary, where emergency and charity cases may be treated.

Fight Tuberculosis with Phonograph.—The board of health of Memphis has arranged a brief series of lectures on "Tuberculosis," laying stress on the way of avoiding the disease, what to do if the disease is contracted, and making special mention of the spitting habit. These lectures are to be communicated to the people by means of a phonograph placed at the corner of Main Street and Madison Avenue.

Society Meetings.—At the annual meeting of Greene County Medical Society, held November 2, the following officers were elected: President, Dr. Isaac B. Brown, Mosheim; vice-president, Dr. Martin A. Blanton, Baileyton, and secretary-treasurer, Dr. S. Walter Woodyard, Greenville.——At the twenty-seventh semi-annual session of the Middle Tennessee Medical Association, held in Clarksville, November 19 and 20, the following officers were elected: President, Dr. Leonard E. Ragsdale, Williamsport; vice-president, Dr. Benjamin F. Fyke, Springfield, and secretary-treasurer, Dr. R. Logan Jones, Nashville.

VERMONT.

College Opens.—The fifty-fifth annual session of the University of Vermont, College of Medicine, Burlington, commenced November 7. The principal speaker was Dr. J. W. Scane, professor of physiology in the university.

Personal.—Dr. D. M. Shea, Burlington, sailed for Europe October 29.——Dr. Bingham H. Stone has been reappointed director of the laboratory of the State Board of Health, Burlington, and C. P. Moat, L. P. Sprague, and Hugh Thompson have been chosen assistants.

Infectious Diseases.—On November 16, more than forty cases of smallpox were reported in Brattleboro and half a dozen smaller towns in southeastern Vermont. The diagnosis of the State Board of Health and the Brattleboro Board of Health was confirmed by the chief diagnostician of the health department of New York City. Five new cases of smallpox were reported November 21. The secretary of the State Board of Health reports that the severe cases are improving and that there is practically no danger of the spread of the infection. On November 28, there were seventeen houses under quarantine in Brattleboro with twenty-two patients and five patients at the Isolation Hospital.——Typhoid fever is said to be very prevalent at St. Albans, where nearly fifty cases are under treatment.

WASHINGTON.

Society Meeting.—At the bi-monthly meeting of Whitman County Medical Society, held in Tekoa, November 16, the need was urged of better laws relative to mental examination of the criminal insane. A committee, consisting of Drs. William B. Palamountain, Colfax, Robert J. Skaife, Colfax, and Cardwell, was appointed to confer with the senators and representatives and arrange for the passage of such a law. Dr. William B. Palamountain was elected president; Dr. A. J. Nelson, vice-president, and Dr. J. Earle Else, Palouse, secretary-treasurer.

WISCONSIN.

Personal.—Dr. William A. Henke, Tomah, has returned from Europe.——Dr. Leonard E. Spencer, Wausau, a member of the State Board of Health, has retired from practice and has disposed of his practice to Dr. J. R. Bryant.

Antituberculosis Association Formed.—The Wisconsin Antituberculosis Association has been organized at Milwaukee, with 800 charter members, and with the declared object of carrying on the fight against tuberculosis. Dr. Mazyck P. Ravenel, Madison, has been elected president, and Dr. D. C. Baer, Milwaukee, secretary.

Society Meeting.—At the annual meeting of Crawford County Medical Society, held in Wauzeka, November 24, Dr. Frank J. Antoine, Prairie du Chien, was elected president; Dr. B. F. Taylor, Mount Sterling, vice-president, and Dr. George H. Perrin, Wauzeka, secretary-treasurer.

Sanatorium Overcrowded.—The State Tuberculosis Sanatorium, Wales, in which there is accommodation for 60 patients, now has a population of 189, and the board of control has decided to ask permission to borrow $2,000 from the general fund and has asked the legislature for an appropriation for additional buildings

GENERAL NEWS AND COMMENTS.

New General Hospital.—A general hospital is being constructed in Pueblo, Mexico, to cost about $80,000, and to accommodate about 600 patients. It is expected that the institution will be ready to open in the fall of 1909.

Physician Wanted for Hospital for Insane.—The United States Civil Service Commission announces an examination on Jan. 13, 1909, at the regular locations throughout the United States, for a medical interne (female) in the Government Hospital for the Insane, Washington, at $600 a year, with maintenance. Each applicant must be unmarried, a citizen of the United States (or about to become such), a graduate of a reputable medical college within two years, and not under 20 years of age. The applicant may apply to the commission at Washington, or to the secretary of any board of examiners. Request should be made for application blank 1312. The commission has experienced difficulty in filling this vacancy, and therefore calls particular attention to this examination.

Society Meetings.—At the annual meeting of the New England Pediatric Society, November 28, papers were read on "Psychotherapy as Applied to Children," by Dr. Alexander C. Eastman, Springfield, Mass.; on "Aplastic Anemia," by Dr. Ralph C. Larrabee, Boston, and Dr. Timothy Leary, Boston; on "Fibroid Phthisis in Childhood," by Dr. Arthur W. Fairbanks, Boston; and on "Human Milk in the Treatment of Various Infections," by Dr. Francis P. Denny, Brookline, Mass. Dr. Charles W. Townsend, Boston, was chosen president; Dr. Addison S. Thayer, Portland, Maine, vice-president; Dr. Fritz B. Talbot, Brookline, Mass., secretary and treasurer, and Dr. Arthur H. Wentworth, Boston, member of the council.——The annual meeting and dinner of the Interurban Academy of Medicine was held in Superior, Wis., November 18. Dr. John M. Robinson, Duluth, was elected president; Dr. H. Jefferson O'Brien, Superior, vice-president; Dr. C. T. Haney, Duluth, secretary-treasurer, and Dr. George H. Conklin, Superior, censor.——At the twenty-fifth annual convention of the Tri-State Medical Association of Arkansas, Mississippi and Tennessee, held in Memphis, November 24, 25 and 26, the following officers were elected: President, Dr. William H. Deaderick, Marianna, Ark.; vice-presidents, Drs. T. S. Hare, Vincent, for Arkansas, S. Wade Glass, Dublin, for Mississippi, and James A. Porter, Ripley, for Tennessee; secretary, Dr. J. H. Eugene Rosamond, Memphis, and treasurer, Dr. J. A. Vaughn, Memphis.

FOREIGN.

The Nobel Prizes.—News by cable confirms the statement in THE JOURNAL last week, page 2069, that the Nobel prize for medicine was to be divided this year between P. Ehrlich of Frankfurt a. M. and E. Metchnikoff of the Pasteur Institute, Paris, the leading immunologists of the world. Ehrlich was the guest of the University of Chicago in 1904, when an honorary degree was conferred on him. He also was presented in 1906, at the International Medical Congress at Lisbon, with the surplus left from the Paris International Medical Congress, which was awarded as a prize for his side-chain theory and work based thereon. Ehrlich was born in a small German town in 1854, and was Koch's assistant at Berlin until he became director of an institute for serum research and experimental therapy in 1896. Metchnikoff is a Russian, and, after studying in Germany, was professor of zoology and anatomy at Odessa until 1882, when he settled at Messina, where he published his works on phagocytosis. In 1886 he returned to Odessa as director of the bacteriologic institute, but preferring research to practical work, he offered his services to Pasteur, who placed a laboratory at his disposal, and here he has remained, notwithstanding brilliant offers from Russia and America. Metchnikoff never took a degree in medicine, but his theoretical, abstract work has supplied a solid basis for concrete medical achievements. The recipients of the Nobel prize for medicine have been: 1901, Behring; 1902, Ross; 1903, Finsen; 1904, Pawlow; 1905, R. Koch; 1906, Golgi and Cajal; 1907, Laveran, discoverer of the malaria parasite. Germany, Great Britain, Denmark, Russia, Italy, Spain and France have thus been honored, and this year the prize is divided between Germany and France. The only prizes that have come to America were the peace prize in 1906, given to President Roosevelt, and the physics prize last year awarded to A. Michelson, professor of the Chicago University. The chemistry prize this year was given to E. Rutherford of Manchester, England, who until within a year or so was professor of physics at McGill College at Montreal.

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The Annual Burlesque Number of the Munich Medical Weekly.—The ninth comic number of the *Münchener medizinische Wochenschrift* has just been issued in honor of the seventy-fifth anniversary of the Munich medical union. It is sparkling with skits on all the latest medical achievements and topics. Not the least comical feature is that the journal is printed with the same departments, type and general make-up so that a second glance is necessary to detect the preposterous transformation in every department and advertisement. A new surgical instrument is described for which high claims are made, even to the extent of its inducing local anesthesia. It is called the tintinnabulotome, and consists of a scalpel with a baby's rattle on the outer end. The knife is concealed in the hand, and the child is pleased with the sound of the rattle. As it is a physiologic law that two sensations can not be perceived at the same time, the sensation of pain from the incision is overcome by the pleasurable auditory stimulus. In the "Current Literature Department," the *Grenzgebiete der Utopie und Ironie* is reviewed, with an abstract of an article which describes an improvement in the technic of lightning treatment of cancer, the author having succeeded in greasing the lightning. One review refers to "Rapid Medical Abstracts," indispensable for any physician who attempts to make summaries of medical articles. The author advises leaving the pages of the original uncut, as abstracts no longer attempt to give the ideas of the original author. The up-to-date abstract presents the views of the abstractor only. Editorial comment on this new book deplores the bad taste of those journals which have not yet outgrown the old practice of redigesting what the author has already digested. An original article describes the advantages of "Side Chains in Infant Feeding." The writer listened to a lecture on "Side Chains," but could not make much out of it. He then asked a pharmacist if he kept side chains in stock, and the pharmacist supplied him with a "side chain powder," which he has been using with fine results in infant feeding. He confesses that he does not know what is in the powder, but he does not believe that those who give Mellin or Nestle or the like, know always what is in them. The results speak for themselves. A warm testimonial on a new preparation to promote the secretion of milk states that 17 of the 20 newly married women, to whom "Milchagol" was given, found their breasts increasing in size in a few months and were able to nurse their new-born children from one to forty weeks. It is mentioned that testimonials from the same author on 27 other new medicinal preparations are soon to be published. In "Correspondence" an inquirer wrote to know how long he should continue to treat heart disease with high power electric baths. The reply was given, "As long as the patient can stand it," and the inquirer writes again to know whether this refers to the physical or financial condition. The advertisement of the meat juice, Pureau, states that each jar represents a condensed ox, and that the juice is a most remarkable tonic for all who sell it, wholesale or retail. The advertisements for assistants state as the one requirement "ability to keep an automobile in repair." An internist who has hitherto had only chemical and histologic experience, but is a good hand with rabbits and dogs, advertises that he would like to get a little bedside experience during his free evening hours, to fit him for a professorship in internal medicine. A "Letter from America" denounces the German medical schools as not providing sufficient material for the students in proportion to their number. No student can learn how to manage a childbirth when there are only 900 in the year to 1,400 students. The writer during his course at a German medical school had opportunity to "conduct" a childbirth once in his entire course of obstetrics, and there were 18 other students and assistants present. He was able to catch a glimpse of the woman's arm and he heard the child cry—that was the extent of his connection with the case. In America, the writer continues, things are much better managed, there being plenty of medical colleges and plenty of childbirths so that there is no overcrowding. At the lying-in hospital connected with Honduras College, for instance, there are 3,000 childbirths annually and only 30 students following the course—the other 150 matriculated medical students are all away playing football or else are in the hospital being patched up after football. The writer ridicules the idea of teaching obstetrics from manikins, and says that it is much better to have 30 students to teach instead of 600 who crowd the amphitheater, but never come into personal contact with the teacher and can scarcely hear him, much less see him, on account of the crowding; who never get a chance to manage a childbirth or treat after-hemorrhage during their entire course, and yet are liable to penalty if they are guilty of any malpractice later. The comments on this delightful burlesque that have been made in previous years in THE JOURNAL apply to this latest number as well, and the "Berlin Letter" in these columns during the last few months gives the clue to some of the satires.

LONDON LETTER.

(From Our Regular Correspondent.)

LONDON, Dec. 5, 1908.

Exhibition of Classified Drawings at the Polyclinic.

Sir Jonathan Hutchinson's exhibitions of classified drawings in his Clinical Museum at the Polyclinic are attended by large and interested audiences. The present exhibition deals with syphilis and is the largest yet made, over 500 drawings being displayed. On Wednesdays at 3 p. m. Sir Jonathan gives demonstrations in which he turns his collection to considerable account. The most important statement which it illustrates is that the term "soft chancre" has no definite meaning. A large collection of drawings of sores so termed by various writers is shown. The sores vary much in character and conform to no type. Sir Jonathan would abolish the term "soft chancre" entirely. All that can be said about a sore which does not show the characteristic induration of the true chancre is that it is not indurated, but the absence of induration is no guarantee whatever that the phenomena of syphilis will not supervene. In close connection with this group is a very important one termed by Sir Jonathan "herpetic chancres." It illustrates multiple sore in the coronal furrow arranged like a group of herpetic vesicles. Sir Jonathan suggests that sores which, owing to their multiplicity, have hitherto been regarded as typically "soft," are those of herpes which have been inoculated by venereal discharges, and of which one or more may assume induration at any time. Thus, multiplicity is by no means always a proof of autoinoculation and the term "herpetic chancres" becomes applicable. Portraits of unilateral groups of white patches in the mouth and throat described as "mucous patches" are also shown. Sir Jonathan also suggests that these are examples of herpes. The curious condition known on the European continent as "syphilitic leucoderma" on the back of the neck and shoulders is shown in several portraits. It does not appear to have ever been observed in England. Sir Jonathan Hutchinson suspects that the dappled appearance produced is caused by a deepening of tint rather than by bleaching and thinks that Fournier's appellation, "pigmentary syphilis," is the best.

The National Hospital for the Paralyzed and Epileptic.

This famous hospital, which may be described as the home of British neurology, since almost all the great neurologists of this country are connected with it, is again in need of enlargement. In half a century it has developed from a small house in Queen Square, Bloomsbury, in which the work was started, into a large hospital with 160 beds and 4,000 out-patient attendances annually, and a convalescent home in East Finchley standing in extensive grounds. A notable feature of the wards is the connection of each with a large and comfortably furnished day-room which is a boon to those patients not confined to bed. An increasing strain has been thrown on the electric department, where there are over 11,000 attendances annually. The accommodation is now limited to two small rooms. In consequence of the space required for the more modern *x*-ray and other apparatus, and the number of patients now attending, this department has had to be enlarged. There is an excellent up-to-date operating theater where Horsley's operations, so well known throughout the world, are performed. Last year fifty operations were performed on the brain and twenty-three on the spinal cord. To meet the heavy demands an extensive scheme has been drawn up which provides for increased accommodation for out-patients. The clinics are attended by a large number of physicians, British and foreign, interested in the study of nervous diseases. At one time much the most popular clinic was that of Sir William Gowers whose diagnosis of the most recondite nervous diseases was carried to a point seldom equalled and never surpassed. Now his place is taken by Dr. Risien Russell, who is equally popular and displays equal mastery of the subject and at a comparatively early age has attained a foremost position in British neurology.

PARIS LETTER.

(From Our Regular Correspondent.)

PARIS, Dec. 5, 1908.

Special Diplomas.

When, about two years ago, there was created the certificate of higher medical studies, which every candidate for the *agrégation* or lowest rank on the medical faculties was to

present, the medical profession unanimously protested. The decree was accordingly rescinded, but a "certificate of admissibility to the *agrégation*" was required instead. This did not relieve the situation. Yesterday a delegation from the Congress of Practitioners laid before M. Clemenceau, the prime minister, the energetic protest of the medical profession against a measure tending to create two classes of practitioners. M. Clemenceau declared that he agreed with the physicians, the obnoxious measure being in a way a re-establishment of the old *officiat de santé* (suppressed by the law of 1892).

The practitioners also demand the suppression of the special diplomas given in legal medicine, hygiene, etc. They maintain that the diploma of doctor in medicine ought to be the all-inclusive university degree, and that, as it calls for examination in legal medicine, hygiene, etc., new diplomas ought not to be issued after the doctorate. It is said, to be sure, that not all physicians possess the qualifications to become medicolegal experts. After carrying out the idea to its logical end, however, that is, after creating as many special diplomas as there are branches of medicine, the only thing left to do would be to suppress the degree of doctor of medicine. No doubt division of labor and specialization become daily more obligatory, in medicine as elsewhere; but to make good specialists it is not necessary to create special diplomas; it is necessary to give the students a good foundation of medical knowledge and then to leave each one to develop his special aptitudes. By the creation of special diplomas, the state seems to admit that the guarantees offered by the diploma of doctor of medicine are not sufficient. But, if this be true, it is the duty of the state to modify its system of medical instruction so as to exact better grounded knowledge from pupils.

Supplementary Medical Instruction.

Alongside of the official medical instruction given by the medical school, independent instruction tends to develop more and more in Paris. Thus, a certain number of physicians and surgeons of the hospitals organized last year an Association of Medical Instruction of the Hospitals. A private hospital, founded in 1903 for the special treatment of the victims of industrial accidents, has recently organized a course of instruction on industrial accidents, consisting of free public conferences intended for practicing physicians. They are obliged more and more by the law of 1908 to understand these questions, which enter in a great degree in daily medical practice. Professor Brissaud, Dr. Lucas-Championnière and others give lectures. A series of practical courses for practicing physicians and students will be given, under the patronage of the Catholic Institute of Paris, by a group of physicians and surgeons of the hospitals, former heads of clinics, internes and specialists. These courses will be essentially practical, being accompanied by examination of patients and treatment by students, presentation of instruments; they will comprehend the principal medical specialties.

A New Clinic Founded by Dr. Huchard.

Dr. Huchard has given an example to be followed. He is approaching the time of retirement from the Necker Hospital (the age of retirement is 65, and Dr. Huchard is now 64), but he feels that "repose is found through labor." He has therefore founded a clinic which will meet a need; for, though there are in Paris clinics of various kinds, there has been none up to the present for diseases of the heart and of the cardiovascular system. In creating the "Clinic for the Heart," Huchard intends to establish also a kind of dispensary for indigent patients. At the inauguration of the clinic last week, among a multitude of the friends and pupils of the master, the latter said: "I hope that other clinics may come into existence alongside of this one—that others, like me, may take the title of independent professor, and that an independent school of medicine may grow up in this corner of Paris."

BERLIN LETTER.

(From Our Regular Correspondent.)

BERLIN, Nov. 12, 1908.

Medical Inspection of School Children.

Fifteen years ago a movement began in Germany to have the children of the public schools regularly supervised in respect to their health not only on their entrance into school, but also during their subsequent attendance, by school physicians, who are appointed by the local, not the national authorities. The published reports of the investigations of the medical inspectors have shown how useful and necessary this movement has been. It is thus made clear that the children of the poorer part of the population, for whom the public schools exist, very often fail to have recourse to medical aid in cases in which it is needed, partly from lack of the necessary means and partly from indolence, and for this reason diseased conditions result which might have been avoided by timely medical treatment. In consideration of this fact the oft repeated request of the medical profession to allow the pupils of the public schools to be supervised by official school physicians has been more and more complied with by the different communities after overcoming the initial difficulties which in many cities, especially in Berlin, were quite great. Now the number of communities which have regular medical inspection of the schools reaches into the hundreds. According to the character of their official position two systems of school physicians are to be distinguished, and regarding the comparative advantages of these systems unanimity has not yet been reached, not even among physicians.

The question under discussion is whether it is better to appoint a physician as school physician as his principal office, that is, to appoint a physician who is to a certain extent a specialist in school sanitation, and whose entire medical activity is restricted to this field, or to appoint a physician in a subsidiary office, that is, to entrust a general practitioner with the additional task of supervising the health of the school children. At the recent annual general medical convention, the Aerztetag, in June of this year, this question was thoroughly debated and the convention reached the following conclusion: In general the achievements in the field of school hygiene do not depend on the system under which the school physician is appointed, but on the personality of the medical inspector and on the improvement in the measures for the physical well-being of the school children. The question whether the school physicians shall be appointed to a principal office or a subsidiary office can not yet be settled at the present time; it depends on the amount of work required and on local and personal conditions. The convention also adopted a series of suggestions for the medical school inspectors, as follows:

1. The young should be familiarized in school with the rules of hygiene. A correct understanding of the rules of health is indispensable for their proper application. This leads to an improvement in the health, welfare and defensive strength of the people and increases thereby the public wealth.

2. In the education of all teachers for public and high schools, hygiene ought to form a special subject of instruction. For this instruction physicians are especially to be chosen as their education and profession guarantee appropriate instruction.

3. With every suitable study the pupils should be reminded of hygiene and held to a constant practice of its rules, but advice as to the treatment of diseases is not permissible. Articles on the care of the health should be introduced into the readers in the schools. For the preparation of such articles in the readers the cooperation of physicians is indispensable. The convention is not prepared to give an opinion regarding the cooperation of the school in instruction regarding sexual matters.

4. Special instruction in hygiene is particularly desirable for the older scholars. In the technical training schools the instruction in hygiene should be assigned to a physician. The appointment of school physicians in all schools will facilitate the carrying out of instruction in hygiene.

5. In order to carry out effectively the instruction and education of the youth of the schools the cooperation of physicians on the school boards is requisite.

An oversight of the work of the medical inspectors is afforded by the report of the Berlin school physicians for 1906-7, which recently appeared. In this year 44 school physicians were employed in the Berlin public schools. The number of scholars to be inspected amounted to 227,750. Each school physician had on the average 5,170 children under observation. At the examination of children entering the school for the first time, 3,100, i. e., 8.7 per cent., were excluded from attendance on grounds of health. Of those which were admitted, 9,169, i. e., 25.8 per cent., were placed under medical supervision on account of defects in health. During the year covered by the report, about 36,000 children were under the supervision of the school physicians. The number of supervised children has grown, little by little, because the appreciation of the value of such a supervision has increased both among the teachers and among the parents of the children. Among the newcomers rejected, 1,140 were excluded on ac-

count of debility, 158 on account of scrofula, and 172 on account of tuberculosis of the lungs. The same grounds gave occasion for continued supervision of about 10,000 children. As a result of examination by the school physicians, a considerable number of children were placed on account of their insufficient intellect in so-called side classes (*Nebenklassen*), in which the requirements with reference to progress in learning are less exacting. In addition, those hard of hearing or with defective vision were discovered and separated by the investigations of the school physicians. During the year 30 children were discovered who had to be transferred to an idiot asylum on account of their mental condition.

The Sale of Medicines.

In Germany the pharmacists are not allowed to sell every remedy freely, i. e., without a physician's prescription. A large number of medicines are excluded from free sale, the so-called hand-to-hand sale (*Handverkauf*), especially the direct and indirect poisons. These medicines, in case they have been dispensed on a physician's prescription, must not be given a patient a second time unless the renewal is sanctioned by a notice written on the prescription by a physician. The number of such medicines which are excluded from the free traffic of pharmacists naturally increases from year to year as the dangerous character of the newly introduced remedies is established. Thus to mention only a few, lysol, which has been a favorite means of suicide and is still so used, veronal and a number of so-called headache medicines are especially reserved for physicians' prescriptions. An article by an apothecary in a late number of the *Pharmazeutische Zeitung* is directed against the decree regarding headache medicines. He complains that almost all the headache remedies are already withdrawn from free sale, and the income of the apothecary is considerably reduced thereby. According to his opinion, there has not been so far any injury to health by the sale of headache powders, and it is not to be assumed that the public is disposed to go to a physician immediately for a simple headache. Such a complaint raised essentially in the interests of the business success of the pharmacists can not be too energetically combated. Not the income of the apothecary, but the welfare of the sick, is what is most important, and it is doubtless an erroneous claim that no injuries to patients have occurred from the dispensing of such remedies. Surely more cases of poisoning by antipyrin and similar medicines have occurred than have become known through the newspapers or the authorities. In the article of the pharmacist referred to, the very much-to-be-regretted fact appears that our pharmacists (as is said to be also the case in England and America) consider themselves as belonging less to the forces organized for the curing of disease than to the business world, and place money-making above their duty of service for the protection of health and overcoming of disease. So much the more is it the duty of the authorities and especially of the government to supervise the business of the pharmacists, in order to prevent injury in this line. Moreover, it is well known that quackery is carried on to a not inconsiderable extent in German pharmacies, notwithstanding the fact that the pharmacists deny this.

VIENNA LETTER.

(From Our Regular Correspondent.)

VIENNA, Dec. 2, 1908.

The Steinhof Lunatic Asylum.

The new Steinhof Lunatic Asylum, which is said to be the largest and best equipped institution of this kind in Europe—perhaps also in the world—has just published its report on the first year of its existence. It consists of fifty-nine separate pavilions, and can accommodate 3,000 inmates. Unlike most free public asylums, it has one division, the sanitarium, which is expected to be self-supporting, for it is intended only for paying patients of the upper classes. This innovation has been received with great satisfaction by the public. Hitherto the only existing asylums were those intended for the lower classes, or the very expensive private homes resorted to by the upper classes. The pavilion system enables an individualized treatment to be given, and the rule is to bring only patients with similar affections in contact with each other.

Careful attention has been given to treatment by occupation. Large plots of arable land, much household work, and many professional occupations are in the hands of the patients, who seem to be doing it very well, and with benefit to their condition also. The milking of the cows and the care of the numerous gardens are all handed over to patients; even the printing of necessary papers is done by the insane.

The medical staff is comparatively small, consisting of 17 physicians, while 450 persons are employed on the nursing staff, the administrative body and in the household. The maximum number of patients allotted to a nurse is 12. The minimum air space per patient is 1,060 cubic feet in the wards, but the mean air space is 1,940 cubic feet per bed. Each pavilion has its own garden, separated from the common park by walls or railings. Heating is accomplished in the wards either by low-pressure steam or by tile stoves; light within the buildings is given by electricity, outside by gas.

As the grounds cover more than half a square mile, an electric tram is provided for. Good drainage is insured by the situation along the gentle slopes of a hill. The ventilation and the pure fresh air in the wards account for the good condition of the patients in respect to the respiratory organs. In fact, no case of disease has occurred which could not be ascribed to the mental condition of the patients. A mortality of only 8.5 per cent. was observed this year; but it must be remembered that many patients now there are suffering from general paralysis and other fatal diseases, and these will no doubt soon swell the mortality rate. The cost of the whole institution was $4,000,000 ($1,500 per bed), while the cost of maintenance is 80 cents a day per patient, against 50 to 70 cents in the general hospitals. The expenses are defrayed partly by the general government, partly by the local government of Lower Austria.

American Surgery as It Appears to an Austrian Surgeon.

In the *Wiener klinische Wochenschrift* Dr. Clairmont, assistant to Professor Eiselsberg, gives his impressions of American medicine, which he obtained on a trip to America for study. He visited the leading surgeons of Rochester (Minn.), Chicago, Baltimore and Philadelphia; watched them during operations, and noted the factors which have contributed to make American surgery so great.

Naturally, Dr. Clairmont had to employ as a standard of comparison the Viennese conditions with which he was familiar. Thus, he finds the absence of a pavilion system, due to the high price of ground, not so bad as might have been expected. American hospitals, founded and maintained by private munificence, compare very favorably in respect to liberality of equipment and comfort with European hospitals, founded and maintained by the state. The absence of gardens is a disadvantage for which roof-gardens do not compensate. The various city ambulance systems are said not to be so well organized as the *Rettungsgesellschaft* in Vienna. On the other hand, Dr. Clairmont was struck by the method of admission of in-patients and out-patients, and by the splendid organization of the hospital management, which often includes even a printing establishment for the hospital publications. The operating theaters, the separation between septic and aseptic operating rooms and the preparatory rooms disappointed Dr. Clairmont somewhat; but he says that European surgeons have much to learn from Americans in regard to economy of material, assistants and the nursing staff. The question of the nursing staff is a burning one on the continent of Europe. While American nurses come from good homes, European nurses come from the lower walks of life.

Dr. Clairmont pronounces the asepsis of American surgeons to be as perfect as possible; he obtained a very good impression from the small number of instruments required, even by the most eminent surgeons; and he also appreciated much the use of sterile water during operations. Anesthesia, which in America is induced mostly by ether, is there one of the most highly developed branches of surgical art; the care, exactness and gradual procedure struck the visitor very much. Dr. Clairmont saw the operations of Halsted, Cushing, Deaver, Mayo, Brewer and other eminent surgeons. He says that, as regards technic and practice, American surgeons are undoubtedly in the front ranks of the profession of the whole world. The abdominal operations of the brothers Mayo, the cerebral operations of Cushing, and the latter's experiments on animals especially elicited Dr. Clairmont's genuine admiration. He paid great attention to the position of American surgeons with reference to appendicitis and diseases of the liver and gall bladder; the methods and leading ideas of the foremost surgeons in America coincide with those of Eiselsberg and his school. Prostatic surgery is much advanced in America. Carrel's methods of suture and transplantation of blood vessels made a lasting impression on the visitor. A visit to the new medical school in Boston concluded Dr. Clairmont's stay in America. He returned some time ago, full of admiration of the achievements attained in surgery within the last few decades.

Pharmacology

"GETWELL TABLETS."

How the Anti-Cori-Zine Chemical Company Extends Its Business.

Physicians who are financially interested in the exploitation of questionable proprietaries (and happily we believe there are very few of these) usually excuse their course on the grounds that their preparations are advertised in medical journals, therefore they must be ethical. This placebo to professional conscience deceives no one, neither does it excuse, but it permits of a definite answer to an unpleasant question. With a "patent medicine" it is different. No physician who wishes to retain his self-respect desires to become in any way identified with so disreputable a business. It is not to be wondered at, therefore, that when a "patent medicine" firm is desirous of selling stock in its concern it leaves physicians severely alone.

Some of these concerns evidently believe that the dental profession does not share the feelings of the physician on this subject. At least that would seem to be a justifiable conclusion after reading some "form" letters sent to dentists by a Chicago broker.

"Being a dentist, you are far enough removed from the position of professional jealousy (maintained by physicians) to see the subject in its practical light and I take it that profits made from 'patent medicines' are just as attractive to you as from any other source. . . ."

"All of this is by way of presenting an opportunity of sharing in the profits of one of the biggest earners in the proprietary field yet discovered. This is the Getwell Tablets. This tablet has been in use for 15 years in St. Louis among the practicing physicians. . . . ."

"A year ago a company was organized among the most prominent men of St. Louis (a city that boasts more big fortunes made from patent medicines than any other in America) called the Anti-Cori-Zine Chemical Company. . . . ."

"A campaign was made in Chicago and $10,000 spent in advertising. The success was phenomenal." . . .

"You doubtless know of the tremendous success made by the Antikamnia people of St. Louis, which has made the originator many times a millionaire, to say nothing of the profits it made for dentists who took the first stock. . . . ."

Then follows a statement of the amount of stock that is to be sold and a glowing prognostication of the vast profits to be made. With this "form" letter is another, purporting to be from the Anti-Cori-Zine Chemical Company to the broker, giving information about the financial standing of the company and its personnel.

"The officers of this company are H. W. Hartwell, president (a physician of 25 years' practice in this city), A. D. Hartwell, secretary and treasurer (manufacturer of paints and varnishes), Joseph Griesedieck, vice-president (manager National Brewers' Assn., St. Louis), E. R. Rombauer, L.L.D. . . ."

"Our tablets are made under contract with Sharp & Dohme of Baltimore, Md. They cost us 65 cents per 1,000 and after boxing and preparation for the market, bring us $13.40 per 1,000."

"You are no doubt acquainted with the splendid profits made on patent and proprietary medicines of this kind, such as Orangeade, [Orangeline?], Cascarets, Bromo-Seltzer, Bromo-Quinine, Laxative Pepsin, etc. . . . . The biggest fortunes in St. Louis have been made on patent medicines. . . . ."

"Profits in this business are far out of the ordinary and 400 to 600 per cent. is only normal. . . . . This is true of every patent medicine of this nature. . . . . ."

There seems to be no particular reason why this new acquisition to the ranks of the "subtle poisons" should not be a financial success. It apparently fulfills all the essential requirements of "patent medicine" ethics: (1) It has been in use for years among practicing physicians (a stock falsehood in this line of business); (2) its company has for its officers an M.D., a paint maker, a brewer and an LL.D.; (3) it is put up "under contract" by an old-line "ethical" house; and (4) there is 400 per cent. profit in it. It would seem that under such auspicious circumstances nothing but gross mismanagement can prevent the Anti-Cori-Zine Company from scoring a big success, as have many St. Louis firms in the same business.

As to the tablets themselves, they vary in no way from their prototypes and are advertised with that classic disregard for truth that characterizes nostrums of all classes.

"No drug habit is formed by the use of Getwell Tablets, even when taken for long successive periods."

". . . . even persons suffering from the severest forms of heart disease can take them without the least danger."

"The average dose is 3 for a man . . . . . robust patients may require 1 or 2 more . . . . taken at once and repeated in an hour if the mucous discharge is not stopped."

The virtues of this wonderful tablet are due to our old friend, acetanilid, aided and abetted by another drug that is becoming increasingly popular with nostrum mongers—codein. Of the former there are practically 2 grains to the tablet; of the latter, 1/20 grain; there is also a small amount of belladonna. A "robust patient" may take—according to instructions—five tablets as a "starter" and five more an hour later. After thus devouring nearly 20 grains of acetanilid, his robustness might be somewhat impaired, but as this is a business proposition paying 400 per cent., one can hardly expect the Anti-Cori-Zine Chemical Company to mention it.

But Getwell is not the original name of the tablet; its earlier name was Anti-Cori-Zine, and as such it was sold to physicians.

"Anti-Cori-Zine is an ethical preparation advertised only to the medical profession."

Like many another acetanilid mixture before the Food and Drugs Act spoiled the game, Anti-Cori-Zine was advertised as a "synthetic."

"Anti-Cori-Zine is not a mere mixture of various remedies holding a reputation as cold cures, *but it is a definite, synthetic chemical.*" [Italics are ours.—ED.]

Presumably an enlightened medical profession combined with a federal statute has caused the "synthetic" falsehood to become stale, flat and unprofitable, and there is now more money to be made in advertising to the public direct rather than via medical journals and physicians.

The medical profession should at least be glad to learn from an outside source that the "position of professional jealousy (maintained by physicians)" prevents it from looking on the "profits made from patent medicines" as "just as attractive" as those made in a more respectable line of business. The case of Dr. H. W. Hartwell, a homeopathic physician of St. Louis, and president of the Anti-Cori-Zine Chemical Company, seems to indicate, however, that the "position of professional jealousy" is not universally maintained. Doubtless the broadening influence of a financial venture that pays 600 per cent. enables him to rise above such petty things as "professional jealousy."

Testimonials or Alleged Clinical Reports.

At different times we have discussed the value—or worthlessness—of testimonials. As evidence, their scientific value is *nil;* as psychic stimulants, they rank high. It is for the latter quality that they are sought by the "patent medicine" and "ethical proprietary" exploiters. Testimonials to "patent medicines" are always paid for in an indirect way, though this fact is not given any undue prominence. It has remained for an English quack concern to come into the open and offer a spot cash remuneration for letters which detail the virtues of their goods. This is done by the "Dr." Gardner's Remedies, Ltd., of London, who advertise in the British press:

"One Guinea each paid for every *bona fide* testimonial that is printed or used in any way as an advertisement, and

ONE HUNDRED POUNDS CASH

for the best testimonial received on or before December 1 next."

London *Truth*, a lay weekly that is aggressively exposing "patent medicine" frauds and quacks, says: "Any one who comes across in the newspapers, after this, surprising personal evidence of the miraculous effects of 'Dr. Gardner's Pink Tablets' or any other specific sold at the same shop will have no difficulty in accounting for the milk in the coconut."

To the initiated, the source of the milk has always been fairly evident, but it will be interesting to see whether the psychic—and only—value of the testimonial will be in any way weakened when the secret of its birth is a matter of public knowledge.

In the proprietary world a recent letter from the Manola Company to physicians shows a similar method of procuring testimonials. Not, of course, that they are called testimonials

—that would be too suggestive—no, "clinical reports" if you please, or "clinical data." Neither does the company offer to pay cash for such testimonials—that is to say "clinical data"—nothing so useful as money. Says the Manola Company:

"We are now preparing a book containing clinical reports."

". . . we would like to have whatever clinical data you can give us in regard to your experience with Manola, even if it only covers one case."

"As a token of our appreciation of such a report we will send you three full-sized bottles of Manola, express prepaid, for your personal use."

In the future, "personal evidence of the miraculous effects" of Manola will—at least to the initiated—at once conjure to one's mental vision three bottles of Manola! Isn't this pretty cheap? Those addicted to the testimonial habit have, therefore, three schedules: Lehn & Fink's,[1] $10.00 a page; the Manola Company, 3 bottles a report; and "Dr." Gardner's, from 1 guinea to 100 pounds, ($5.00 to $500.00) a testimonial. From a purely business standpoint, it would appear that the out-and-out "patent medicine" firm offers the highest inducements.

The Manola people are evidently profiting by past experience. They it was who conceived the idea[2] of getting the physician to act as a peddler for Manola, and at the same time force the druggist to fill up his shelves with their stuff. The price for this service also, was—three bottles!

Will the time ever come when the medical profession will administer such a rebuke to firms of this type that fear of commercial annihilation will compel in them that regard for decency which less drastic methods seem unable to effect?

Emanosal and Radium.

When the remarkable properties of radium were discovered, the "patent medicine" ranks were soon swelled by a number of "radium cures." Then came the Food and Drugs Act, which interfered with the quack's "personal liberty" to the extent of insisting that he must not tell a barefaced lie on the label. This made "radium cures" flat, stale and unprofitable, and the proprietors thereof either dropped the "patent medicine" business for a more respectable one or perhaps turned their talents toward headache powders or eye lotions.

Meanwhile radium and other radioactive substances were being studied scientifically and a large amount of data accumulated. It was found, for instance, that water can be charged with radium emanations. As a corollary some one formulated the brilliant theory that possibly the therapeutic value of certain springs is due to their impregnation with radium emanations. The fact that water soon loses its radioactive properties was made to explain why the water of these same springs ceases to have any medicinal virtue when transported.

It is now claimed that the emanations can be made portable by combining them with certain salts. These salts when dissolved in water artificially radioactivate that fluid which, as a therapeutic (?) agent, can be used either internally or externally. Even had these radioactivated salts any therapeutic value, their use in the form of tablets for producing radioactive solutions, however attractive as a method of medication, is one that is open to serious objections. Such tablets deteriorate rapidly, even when honestly made. To the unscrupulous maker, their manufacture offers a wide field for sophistication, as it is not an easy matter to determine their radioactivity.

To ascertain the character of certain preparations on the market, Professor Herbert N. McCoy, of the University of Chicago, an authority on the subject of radioactivity, on our request, made an examination of two kinds of tablets. Of the first he reports: "They are faintly radioactive as compared with uranium. They consist essentially of common salt and powdered pitchblende. After dissolving the former in water, there was left a black insoluble residue of rather coarsely powdered pitchblende (a mineral essentially U_3O_8, which always contains a small proportion of radium). Each tablet contains 0.18 gm. (3 grains) of pitchblende worth 1/10 of a cent."

The second sample of tablets was from a reliable manufacturer, Farbwerke vorm. Meister Lucius & Brüning. This firm asserts that its preparation, "Emanosal," contains the radium emanation in an absolutely permanent form. According to Laqueur, these tablets when fresh, equal 8,000 units of radioactivity, though Nagelschmidt has found them to vary between 2,000 and 5,000 units. Professor McCoy reports that these tablets were completely soluble in water and consisted largely, or wholly, of salt and sodium carbonate. They were faintly radioactive and about 1.5 per cent. as active as an equal weight of pitchblende. Each tablet has an activity equal to that of 6×10^{-8} gm. of radium. To put it another way: If radium is worth $2,325,000 an ounce ($75 a milligram) each tablet contains about ½ of a cent's worth of radium. They sell for fifty cents each.

It is surprising that enterprising quacks have not put on the market similar tablets. They could still tell the truth on the label and at the same time make a comfortable profit.

1. THE JOURNAL, Feb. 29, 1908.
2. THE JOURNAL, May 6, 1905.

Correspondence

Bovine Necropsy as Object Lesson on Importance of Tuberculin Diagnosis of Tuberculosis.

MARSHALLTOWN, IOWA, Dec. 5, 1908.

To the Editor:—In response to your request for information and description of a demonstration on a cow affected with tuberculosis, which took place in our city last February, I am pleased to give the following particulars:

I have been much impressed by statistics showing the prevalence of tuberculosis among the farming classes. In corresponding with the bureaus of animal industry of the experimental stations of our own and other agricultural states of the middle west, I also noticed the increase and widespreading prevalence of tuberculosis among cattle and hogs. This induced me to study the relations between bovine and human tuberculosis. For instance, in the statistics of tuberculosis of the Board of Control of State Institutions for 1906, out of 5,469 cases reported—which does not mean complete statistics of the state—the housewives head the list with 1,101 cases; next come the farmers, 657 cases; farmers' wives, 100 cases; sons and daughters, 83 cases—a total from rural life of 840 cases. These latter cases far outnumber those of any single occupation other than that of housewife or of several other occupations together. Why should tuberculosis be so prevalent in country life? The more I study statistical reports on tuberculosis, the more I am convinced that bovine tuberculosis is a great factor in the wide prevalence of tuberculosis in the human race. Therefore, I have become an ardent advocate of the elimination of bovine as well as human tuberculosis.

In August, 1907, being a member of the city council and local board of health, I introduced an ordinance, which was passed, providing that "whosoever within the corporate limits of the City of Marshalltown, Iowa, shall offer for sale milk or products of milk—cream or butter—shall first procure a license, previous to the granting of which he shall state in writing the number of cows, his place of residence, and whether he procures milk from other source than his own dairy"; and that "the mayor shall appoint a veterinarian in good standing with the State Board of Health, who shall immediately proceed to test all cows or other cattle on premises, unless wholly isolated from milk cows, with what is known as the tuberculin test for tuberculosis."

This, of course, seemed to the owners of milk cows a radical measure, and a storm of protests arose. The dairymen organized, secured legal advice, and threatened suits. I sought to allay prejudice by argument, and suggested to the veterinarian and mayor, who were heartily in support of the measure, that it would be useful to explain to the public the lesions of tuberculosis in animal tissues by slaughtering and

exposing the carcass of a cow which by previous tuberculin test had been shown to be affected with tuberculosis. Thus many might be convinced that the use of milk, cream or butter from a cow sick with tuberculosis—or any other disease, for that matter—was dangerous to the health and should be prohibited. The announcement of the test and demonstration created much interest. The occasion was auspicious, as a short course in grain and stock judging and domestic science was being given for farmers under the auspices of the Iowa State Agricultural College.

The cow on which the demonstration was to be made had been condemned a few days previously by the city inspector, after showing a decided reaction from the tuberculin test. The animal's appetite had been good, and it had been furnishing milk for one of the regular routes of the city. In appearance its physical condition did not indicate disease, especially tuberculosis, as pictured in the minds of most people. The hair was smooth and the submaxillary and superficial glands were not enlarged. When the abdominal cavity was opened a good supply of fat was noticed. There was no enlargement of mesenteric glands, but the liver presented an irregular surface and was the seat of several tuberculous areas of compact nodules, yellowish-gray in appearance. One especially large deep-seated mass of tubercles was bisected and revealed that dense characteristic change in tissue formation of the tuberculous nodule; the central portion had become caseous, and before long, disintegration would have taken place. The spleen also was the seat of numerous small tubercles the size of a split pea and somewhat larger, hard and uneven to the touch, with the same characteristic appearance as those of the liver. The lung tissue was somewhat pale in appearance and there was tuberculous infiltration in the middle and upper lobes of the right lung. Numerous large and small grayish tubercles seemingly blocked air spaces. Many of these on cross section had a caseous appearance. One large cheesy mass, three inches in diameter, circumscribed by thin walls, was found in a state of softening, almost to liquefaction and cavity formation, near the posterior and upper portion of middle right lobe. These gross lesions were readily seen without a microscope. There were numerous other lesions in various stages; the deep glands on the posterior surface of the pleural cavity were enlarged. The glands of the udder were not enlarged or affected, as determined without section. Dr. J. H. McNeil, head of the division of veterinary medicine of Iowa State Agricultural College, gave an interesting lecture on bovine tuberculosis, the method of obtaining tuberculin, its harmlessness, and its great value as a diagnostic remedy in tuberculosis. A profound impression was made and the dairymen who had previously organized to fight the ordinance requiring the tuberculin test ceased their opposition and gave their assistance to the city council in its efforts to secure enforcement of these necessary precautions. The news of the demonstration, we believe, has gone far and created much interest in outside communities, as frequent requests for information from cattle men and city councils are received.

W. S. DEVINE.

Bound Volumes of The Journal—A Proposition on Which Comments Are Desired.

MONTECITO, Calif., Dec. 2, 1908.

To the Editor:—I have a proposition for the consideration of THE JOURNAL, and incidentally for criticism by members of the ASSOCIATION. THE JOURNAL is naturally that medium which first brings to the notice of the bulk of the profession anything that is new in the science of medicine. We read the results of investigations first as news and later, as we wish to apply them in our own practice, we look up the back numbers of THE JOURNAL to refresh our memory. It seems to me that this reference feature of the paper has never been adequately emphasized and exploited, as compared with its other function of new-giving. I am of the opinion that on reflection most members will admit that the former is as important as—is, in fact, the complement of—the other.

The man who is throwing aside his copies of THE JOURNAL after the first perusal is getting but a tithe of that for which he is paying, that which is rightly his. The news items, the latest discoveries in various lines of research, pass weekly through our cerebral clearing-house and are there sorted into their respective pigeon holes, forgotten or remembered as they appeal to the interest uppermost in each of us. We can remember the general drift of an epoch-making discovery, but the details, that painstaking attention to minutiæ which is the inevitable requisite condition of success, are too elusive for human memory.

The text-books, at best, give us a bare historical account of results attained, summed up dispassionately long after the fight. Our weekly JOURNAL, on the other hand, shows the battle in detail as by vivid pen-pictures of a war correspondent; obstacles and difficulties, now appearing insuperable, now yielding before well-directed onslaught. There is as much difference between reading in the morning newspaper the bare score of a championship university football game and seeing from the bleachers the actual contest itself. All matters relating to medical progress the bound volume of THE JOURNAL offers in graphic chronologic sequence, months, often years, before any text-book on the subject is published.

Why, then, do we not bind our JOURNALS? For most of us this binding proposition has been something of a nightmare, and we can scarcely be blamed if many of us have shirked it altogether, or (paving a certain road with good intentions) have put it off from year to year. To the successful busy practitioner the semi-annual hunt for the two or three copies mysteriously but inevitably missing—the search for a local bindery (it is incredible how scarce good binders seem), the transportation of THE JOURNALS to and fro, the explanations, the cost in money and (what matters more) in time, and last, but not least, the futile effort to have the product of this year look like a creation of at least the same generic species as the abortion the peripatetic binder turned out for us a six-month ago, all these are small worries which surely one is justified in evading, even perhaps at the cost of a ready reference library.

Now, why can not the management of THE JOURNAL take this load off our shoulders (and our consciences)? It is in a position to do it for us far better than we can do it for ourselves, and incidentally save us all further thought in the matter. The few extra dollars with the annual subscription will never be felt.

Figure it out as a business proposition, from the point of view of the doctor. Put on one side the trifling additional cost a mere bagatelle to any of us—and the few strokes of the pen requisite in making out a check for a larger amount. On the other side, put the time wasted, as just pictured, which could be profitably spent in our practice or our recreation. There are few of us to whom time is not the most valuable commodity we possess; yet the time is the smallest part of it. There is the mental effort, the knowledge in our subconsciousness that in a few months or weeks we ought to be tackling that pile of dusty journals disarranged by many hunts for So-and-So's article about the treatment for such-and-such. This is an age of specialism; in nothing more so than in medicine. Yet we have allowed others to take the lead of us in this direction. This idea of mine is not mine at all. Like Kipling's Homer:

> "And what 'e thought 'e might require,
> 'E went and took—the same as me!"

I just stole it. For years it has been the custom of certain magazines, particularly the foremost yachting paper, the *Rudder*, to offer at the end of one year the bound volume, with the subscription for the forthcoming year at an inclusive rate. In the instance mentioned the plan has worked admirably; so why should not THE JOURNAL of the American Medical Association make us a similar proposition?

As to the price, $12 has been suggested for the current subscription and the two half-yearly bound volumes—$3 being the regular price for binding the two volumes. Why not make it $13, making use of the low prepaid book rate, shipping the completed volumes, express paid, to the subscribers? It seems to me that this can not fail to appeal to the majority of the members of the ASSOCIATION. When the blanks are sent

out for subscriptions, why not have a separate line which allows one to subscribe $13 instead of the old-time $5 for THE JOURNAL for 1909 and the two bound volumes for the same year when completed, delivered, express prepaid?

JULIUS H. HURST.

[COMMENT.—THE JOURNAL will be pleased to have an expression of opinion from its readers as to this proposition. A postal card will suffice.—ED.]

Medical Economics

THIS DEPARTMENT EMBODIES THE SUBJECTS OF ORGANIZATION, POSTGRADUATE WORK, CONTRACT PRACTICE, INSURANCE FEES, LEGISLATION, ETC.

County Secretaries Meet in Michigan.

In the *Journal of the Michigan State Medical Society* for November appear the proceedings of the first annual meeting of the Association of County Secretaries of the Michigan State Medical Society, held at Detroit, Sept. 30, 1908. Thirty-six county and state officers devoted the afternoon and evening to a discussion of the practical problems of medical organization, seven papers being read and discussed.

Dr. A. E. Bulson, Jackson, Councilor for the Second District, spoke on "Medical Organization, What It Has and Should Mean in Michigan." The history of medical organization in Michigan was reviewed and present conditions contrasted with those which existed prior to reorganization. Dr. Bulson also discussed medical legislation, the value of postgraduate work, the importance of medical students receiving instructions in medical ethics and the possibilities of improvement in medical society work in the future.

Dr. C. S. Oakman of Detroit spoke on the scientific work of county societies, emphasizing the importance of attractive programs and advising that the program be made out for an entire season in advance: that "text-book papers" be avoided and that papers be illustrated wherever possible. Symposiums were regarded as of value whenever the subject is broad enough to warrant them. The value of frequent notices and of printed programs for meetings was also emphasized.

Speaking on the "Social Features of the County Program," Dr. C. D. Morris of Pontiac related the experience of his own county society in supplying the social needs of its members. An extended discussion followed, various secretaries present relating their experiences.

An excellent paper on "The Business Side of the Secretary's Work" was read by Dr. A. S. Kimball, Battle Creek. Some of his conclusions should be considered by every county secretary. Briefly summarized, they were: Keep the society's business independent of your own business affairs. Maintain a separate account for each member as well as a separate cash account showing all collections and expenditures. Before the annual meeting have each account posted to date and dues for the new year entered so that members can pay at once and receive proper credit. The nightmare of the secretary's official existence is the collection of dues. Persistency and tact are two qualities absolutely essential for the successful county secretary. It is as tiresome to hammer a physician for his dues as it is to dun a patient for the payment of services long since rendered. Never draw a cent out of the society's account save by check, so that your returned vouchers will check up with your final account. If the county secretary fails to report a member in good standing, he will probably be placed under the ban by the state secretary. While county secretaries have their troubles in keeping local members in line, the state secretary has his, greatly multiplied. In order to do justice to all, the county secretary should, immediately on the receipt of the member's dues, remit them to the state secretary. With close application and systematic methods, many of the petty embarrassments and unpleasant features of the county secretary's work would disappear.

County secretaries are middlemen, buffers alike for state secretary and member. Prompt, businesslike dealings with both will make their position far more pleasant. "We, as secretaries, must then, first of all, inaugurate system into our whole work; promptness both in our dealings with the state society and local members; maintain, or if necessary, cultivate patience, persistency and diplomacy in our dealings with our fellow-members, and practice the strictest economy in our dealings with others for the good of our society bank account; and, finally, account in a clear and concise way for our year's work at the annual meeting." The protracted discussion which followed Dr. Kimball's paper showed that questions relating to the business management of the society were regarded as vital to the progress of the organization.

Dr. J. C. Johnson, Lenawee, spoke on "New Members and Attendance," emphasizing the importance of personal invitations to each non-member and especially to those who have recently located in the county.

Dr. C. S. Cope, Ionia, under the title "What Can be Accomplished by Hustling," reviewed previous experience in medical organization in his county, and related the methods used in interesting the physicians in medical organization during and after the reorganization period. Letters were sent to every physician in the county who could not be reached by personal visitation. A few lines calling attention to the coming meeting and inviting attendance and cooperation were repeated from time to time. A tasteful, inviting program was printed for each meeting and a copy sent to each member, efforts being made to have each program contain some unique and attractive feature. Special efforts are also made to have the meetings bright, attractive, and as short as is consistent with thoroughness. Long drawn-out discussions and stilted parliamentary sittings are avoided. Frequent banquets and luncheons are held, the physicians of the town in which the society meets generally acting as hosts. On the secretary falls the burden of originating and carrying out plans that will attract and hold the members, and unless he is self-sacrificing and willing to do all the work, he had best not accept the office, for without these necessary qualifications, he will be a failure. "The man to whom the county medical society most appeals and whom it is designed to benefit is the county doctor. . . . It is to reach him, to bring forth the best that is in him . . . that the society and the secretary must bend every effort. This is no boy's play. It will weary you, tax your ingenuity to the utmost, but you will reap a glorious harvest if you are faithful to the trust given you."

At the dinner given in the evening, an especially valuable paper was read by Dr. B. R. Schenck, the state secretary. Dr. Schenck took as his subject "The Michigan State Medical Society—What, When, Where, Why, and How It Is," the object being to explain to the county secretaries of the state the exact relation existing between the county and state societies and the national Association; what constitutes membership and why certain methods were necessary. Considering what the state society is, Dr. Schenck said: "The center of the communal life of physicians is the county society. It is to the local organization that the individual physician owes his first allegiance. If the local organizations are supported and built up into what they are capable of becoming, there may be no fears as to the prosperity of the state or national organizations. The state association is but the aggregate of the county societies' activities. It is the sum total of effort and achievement, as manifested in the local organizations. The influence of the state society is great, but compare its influence with that vast influence which is exerted by our fifty-five active county societies, meeting weekly, bi-weekly, monthly or quarterly. There are scheduled for the counties of this state during the coming year, 392 different meetings with an attendance which I have very conservatively estimated at 7,250. The state society is the aggregate—it is the great centripetal force that binds these 55 units together, keeping them working in harmony, supplying ideas and new motives. . . . It is the conception of the state society as merely a body of men which meets yearly for a two days' session of scientific and social intercourse and lying dormant between whiles, which I wish to combat. Our state society exists every day in the year in our county societies."

Considering the question why the state society exists, Dr. Schenck quoted from the constitution of the state society and showed that out of 4,200 physicians in the state, there were 1,975 paid members, being 47 per cent. of the physicians of the state, or about 63 per cent. of those eligible to membership. The objects of the state society are to extend medical knowledge and advance medical science; to elevate the standard of medical education; to guard the material interests of the physicians of the state and to enlighten and direct public opinion on great problems of state medicine. While these purposes are being partially carried out, opportunities are being wasted, which, if grasped, would show the profession becoming more capable and honorable within itself and more useful to the public in the prevention and cure of disease and in prolonging and adding comfort to life.

Under the heading, "How the State Society Is," Dr. Schenck discussed in detail the points of contact between his work and that of the various county secretaries, enumerating the methods used for regulating membership and showing how necessary it is for the successful working of the organization that every official should do his part promptly and accurately. A critical discussion of the state journal closed this most valuable paper.

The above synopsis is given, not only because many of the ideas brought out by the speakers were of great practical value, but also in the hope of encouraging other state secretaries to provide for annual meetings of the secretaries of county societies and the general officers of the state association. As our organization grows and as our various lines of work become more and more complicated, the necessity for accurate, prompt and effective cooperation between the different parts becomes more apparent. A single inefficient, careless or delinquent executive officer in any part of the organization can cause much unnecessary work and vitiate the results of the good work which is done by others. It is imperative that the clearest understanding and the closest cooperation should exist between the state society and the various county societies; that the county secretary should understand clearly why certain things are expected of them and how these things can best be done. In no way can this be so readily accomplished as by conferences held at least annually and, preferably, semi-annually. Already, a number of our states, notably, Pennsylvania, Ohio, Iowa and Illinois, have held such conferences. It is to be hoped that their example will be followed by other states until these meetings will become an established part of our yearly work.

POSTGRADUATE COURSE FOR COUNTY SOCIETIES.

DR. JOHN H. BLACKBURN, DIRECTOR.
BOWLING GREEN, KENTUCKY.

[The Director will be glad to furnish further information and literature to any county society desiring to take up the course.]

Fifth Month—Second Weekly Meeting.

DISEASES OF PENIS.

PHIMOSIS.—Congenital, acquired. Indications for circumcision. Technic. Complications.

PARAPHIMOSIS.—Causes. Treatment, reduction, incision.

WOUNDS OF PENIS.—Contused, incised, lacerated. Dangers, hemorrhage, injury of urethra, infection.

FRACTURE OF PENIS.—Causes, prognosis, treatment.

INFLAMMATIONS.—Acute and chronic, causes, prognosis.

BALANITIS AND BALANOPOSTHITIS.—Diagnosis, treatment.

HERPES PROGENITALIS.—Causes, diagnosis, differentiation.

TUMORS OF PENIS.—(a) Verrucæ or papillomata; pathology, causes, diagnosis. (b) Epithelioma; symptoms, diagnosis, extension, treatment. Technic of partial amputation, of complete amputation.

DISEASES OF THE URETHRA.

HYPOSPADIA.—Balanic, penile, perineal; defects associated with each. Indications for treatment.

EPISPADIA.—Associated malformations. Treatment.

WOUNDS OF URETHRA.—Surgical or accidental. Incised, lacerated, contused, punctured. Complications, treatment.

RUPTURE OF URETHRA.—Causes in (a) penile, (b) perineal portion. Partial or complete. Symptoms, hemorrhage, tumor formation, pain, retention of urine. Complications, hemorrhage, retention and extravasation of urine, false passages, sloughing, fistula, stricture. Treatment: palliative, operative, posterior or retrograde catheterization.

FOREIGN BODIES AND CALCULI.—Diagnosis, treatment.

URETHRITIS (NON-VENEREAL).—Predisposing causes: (a) Diathetic conditions, (b) chronic urethral disease, (c) morbid states of urine, (d) sexual abuses, (e) dietetic excesses, (f) alcoholism. Exciting causes: (a) Trauma, (b) bacteria (non-specific), (c) toxins, (d) chemical irritation, (e) sexual strain.

Fifth Month—Third Weekly Meeting.

DISEASES OF THE BLADDER.

EXSTROPHY.—Cause, associated defects, associated pathology. Treatment, palliative, operative.

HYPERTROPHY AND ATROPHY.—Causes, diagnosis, prognosis.

WOUNDS OF BLADDER.—Contused and lacerated, gunshot. Intraperitoneal, extraperitoneal. Symptoms: Urine in wound, straining urination with blood or bloody urine, probe into bladder or urethral sound out through wound, shock. Complication: Hemorrhage, peritonitis, cellulitis, fistula.

RUPTURE OF BLADDER.—Causes: (a) Predisposing, distention, alcoholism, adhesions from cellulitis, chronic cystitis. (b) Exciting, fractures, muscular strain, fall on ischium, acute retention, injections. Pathologic rupture. Intraperitoneal and extraperitoneal rupture. Symptoms: General and local, physical signs. Treatment, after-treatment.

CYSTITIS.—Etiology: Predisposing, congestion of bladder due to (a) retention, (b) trauma, (c) abnormal muscular contractions, (d) abnormal urine, (e) tumors and calculi, (f) cold, (g) sexual excesses, (h) cardio-vascular disease, (i) cerebrospinal lesions. Exciting cause, local infection, extension, organisms found. Pathology: (a) Catarrhal, (b) interstitial, (c) membranous, (d) gangrenous.

TUBERCULOSIS, CALCULI AND TUMORS OF BLADDER.

TUBERCULOSIS.—Infection (Koch): 1. Bacilli in body; (a) through blood current, (b) by lymph channels, (c) excretion of bacilli, with or without nephritis. 2. Bacilli from without: (a) by cohabitation, (b) by catheterism. Pathology: Pericystitis, changes in wall, mucous membrane. Symptoms: Onset, hematuria, pyuria, pain, general symptoms. Microscopic examination of urine, cystoscopy.

VESICAL CALCULI.—Varieties: Uric and uratic, phosphatic, calcium oxalate and carbonate, cystin. Etiology: Age, sex, drinking water, geographic distribution. Symptoms: Frequent urination, pain, hematuria, reflex disturbances. Treatment: Preliminary, litholapaxy, lithotomy, perineal and suprapubic.

TUMORS.—Classification and etiology: (a) Benign, papilloma, adenoma, fibroma, myxoma, cysts; (b) malignant, carcicystoscopic appearance, in each. Symptoms: Hemorrhoma, sarcoma, mixed tumors; frequency, site, number, attachment, infiltration, lymphatic involvement, age, sex, rhage, pain, frequent urination, fragments of tumor.

The Public Service

Army Changes.

Memorandum of changes of stations and duties of medical officers, U. S. Army, week ending Dec. 12, 1908:

Kulp, John S., maj., retired from active service on account of disability, Dec. 4, 1908.

Truby, A. E., maj., detailed member of examining board at San Francisco, vice Col. G. H. Torney, relieved.

Kiersted, H. S., capt., granted leave of absence for one month, about Dec. 15, 1908, with permission to apply for an extension of 15 days.

Kendall, W. P., major, granted leave of absence for 10 days.

Worthington, J. A., lieut., assigned to duty on transport *Thomas*, instead of transport *Crook*.

Pinkston, O. W., lieut., when services are no longer needed on transport *Crook*, ordered to Hot Springs, Ark., for duty at the Army and Navy General Hospital.

Nichols, H. J., lieut., granted leave of absence for two months, on arrival in United States.

Lewis, W. J., maj., relieved from duty at Ft. Sill, Okla., and ordered to Ft. Thomas, Ky., for duty.

Pierson, R. H., capt., ordered from Ft. Niagara, N. Y., to Ft. H. G. Wright, N. Y., for temporary duty.

Byrne, C. B., col., ordered to report before Army retiring board at Washington, for examination.

Mount, J. R., M. R. C., leave of absence revoked.

Sparrenberger, F. H., M. R. C., relieved from duty at Ft. Washakie, Wyo., and ordered to Ft. Warren, Mass., for duty.

Brewer, I. W., M. R. C., when relieved from duty at Ft. Warren, Mass., ordered to San Francisco, and thence to sail for service in the Philippine Islands.

Johnson, C. W., M. R. C., ordered from Ft. Des Moines, Ia., to Ft. Meade, S. D., for temporary duty.

Smith, R. D., M. R. C., relieved from further duty in the Philippines Division.

Stallman, G. E., dent. surg., left Ft. Logan H. Roots, Ark., for duty at Ft. Sill, Okla.

Whinnery, J. C., dent. surg., left Ft. Case, Wash., for duty at Ft. Ward, Wash.

Tignor, E. P., dent. surg., left Governor's Island, N. Y., for duty at Ft. Howard, Md.

Ratliff, L. H., cont.-surg., contract annulled Nov. 26, 1908.

Navy Changes.

Changes in the Medical Corps, U. S. Navy, for the week ending Dec. 12, 1908:

Carpenter, D. N., surgeon, ordered to the Naval Academy.

Warner, R. A., P. A. surgeon, detached from the Naval Academy and ordered to duty at the naval hospital, Norfolk, Va.

Billings, E. O. J., asst.-surgeon, detached from the *Ranger*, when placed out of commission, and to duty at the naval hospital, New York.

Geiger, A. J., P. A. surgeon, detached from the naval station, Guam, L. I., and ordered to the *Supply*.

Casto, D. H., asst.-surgeon, detached from the *Supply* and ordered to continue duty at the naval station, Guam, L. I.

Thomas, G. E., acting asst.-surgeon, appointed acting assistant surgeon from Dec. 3, 1908.

Nelson, F. M., P. A. surgeon, ordered to the *Monadnock* and *Monterey* when discharged from treatment at the naval hospital, Canacao, P. I.

Downey, J. O., asst.-surgeon, detached from the *Relief* and ordered to the *Charleston*.

Public Health and Marine-Hospital Service.

List of changes of stations and duties of commissioned and other officers of the Public Health and Marine-Hospital Service for the seven days ended Dec. 9, 1908:

Blue, Rupert, P. A. surgeon, granted 4 days' leave leave of absence from Dec. 9, 1908.

Billings, W. C., P. A. surgeon, Bureau orders of Nov. 28, 1908, amended and directed to report to the superintendent of the Revenue Cutter Service School of Instruction, Dec. 2, 1908.

Goldberger, Joseh, P. A. surgeon, granted 1 day's leave of absence, Dec. 3, 1908, under paragraph 191, Service Regulations.

Sweet, E. A., P. A. surgeon, granted 1 month's leave of absence from Nov. 25, 1908, on account of sickness.

Sweet, E. A., P. A. surgeon, relieved from further duty at San Diego, Cal., on arrival of Surgeon Paul M. Carrington, Dec. 2, 1908.

Hurley, J. R., asst.-surgeon, granted 10 days' leave of absence from Dec. 6, 1908.

Kastle, Joseph H., Chief Division of Chemistry, Hygienic Laboratory, detailed to represent the Service at the annual meetings of the American Physiological Society and the American Society of Biological Chemists to be held at Baltimore, Md., Dec. 28, 1908, to Jan. 2, 1909. Dec. 4, 1908.

Bowie, Robert I., sanitary inspector, granted 6 months' leave of absence from Feb. 1, 1909, without pay.

Branham, H. M., acting asst.-surgeon, granted 4 days' leave of absence from Nov. 10, 1908.

Foster, S. B., acting asst.-surgeon, granted 23 days' leave of absence from Dec. 6, 1908.

Gibson, L. P., acting asst.-surgeon, granted 5 days' leave of absence from Dec. 2, 1908.

Hallett, E. B., acting asst.-surgeon, granted 2 days' leave of absence from Dec. 9, 1908.

Light, S. D. W., acting asst.-surgeon, leave of absence, granted Nov. 18, 1908, for 5 days from Nov. 17, 1908, amended to read 30 days from Nov. 18, 1908. Dec. 4, 1908.

Nute, A. J., acting asst.-surgeon, granted 14 days' leave of absence from Dec. 16, 1908.

Tappan, J. W., acting asst.-surgeon, granted 10 days' leave of absence en route to station. Dec. 5, 1908.

Wilson, J. G., acting asst.-surgeon, granted 3 days' leave of absence from Dec. 6, 1908, under pargraph 210, Service Regulations.

BOARD CONVENED.

Board of medical officers convened to meet at the Marine-Hospital in Baltimore, Md., Dec. 7, 1908, for the purpose of conducting a physical examination of a cadet of the U. S. R. C. S. Detail for the board: Surgeon W. P. McIntosh, chairman; P. A. Surgeon W. C. Billings; and P. A. Surgeon J. W. Schereschewsky, recorder.

Health Reports.

The following cases of smallpox, yellow fever, cholera and plague have been reported to the Surgeon-General, Public Health and Marine-Hospital Service, during the week ended Dec. 11, 1908:

SMALLPOX—UNITED STATES.

California: San Francisco, Nov. 15-21, 3 cases.
Illinois: Springfield, Nov. 27-Dec. 3, 1 case.
Indiana: Lafayette, Nov. 15-30, 6 cases.
Kansas: Topeka, Nov. 22-28, 13 cases.
Kentucky: Covington, Nov. 22-28, 13 cases.
Maine: Saint David, Nov. 22-28, 1 case.
Michigan: Grand Rapids, Nov. 15-21, 1 case; Saginaw, Nov. 22-28, 3 cases.
Montana: Butte, Nov. 4-17, 7 cases.
Ohio: Cincinnati, Nov. 21-27, 1 case.
Texas: San Antonio, Nov. 22-28, 2 cases.
Vermont: Bellows Falls, Dec. 4, 1 case; Brattleboro, Nov. 1-Dec. 4, 60 cases; Dummerston, 2 cases; East Dover, 22 cases; Putney, Dec. 4, 1 case; South Londonberry, Nov. 1-Dec. 4, 2 cases; West Charleston, Dec. 4, 1 case.
Wisconsin: LaCrosse, Nov. 22-28, 5 cases; Manitowoc, Nov. 15-21, 25 cases; Milwaukee, 3 cases.

SMALLPOX—INSULAR.

Philippine Islands: Manila, Oct. 18-24, 5 cases, 2 deaths.

SMALLPOX—FOREIGN.

Arabia: Aden, Nov. 2-9, 2 deaths.
Brazil: Para, Oct. 25-Nov. 7, 2 cases, 1 death; Rio de Janeiro, Oct. 19-25, 411 cases, 190 deaths; Santos, Oct. 5-18, 17 cases, 5 deaths.
Canada: Charon Brook, Nov. 22-28, 1 case; Edmunston, 5 cases; Halifax, Nov. 15-21, 1 case; Kingston, 40 cases; St. Anne Quisibis, Nov. 22-28, 1 case; St. Basil, 4 cases.
Egypt: Cairo, Oct. 15-21, 5 cases.
France: Paris, Nov. 8-14, 3 cases.
India: Bombay, Oct. 27-Nov. 3, 1 death; Calcutta, Oct. 11-17, 2 deaths.
Italy: General, Nov. 8-15, 34 cases; Genoa, Oct. 1-31, 7 cases; Naples, Nov. 8-15, 18 cases, 1 death.
Java: Batavia, Oct. 11-24, 4 cases.
Mexico: Mexico City, Oct. 4-17, 6 deaths.
Norway: Christiania, Nov. 1-7, 1 case.
Russia: Moscow, Oct. 18-Nov. 14, 55 cases, 25 deaths; Riga, Nov. 8-14, 2 cases; St. Petersburg, Oct. 21-27, 8 cases; Warsaw, Oct. 18-21, 12 deaths.
Spain: Barcelona, Nov. 11-21, 29 deaths; Seville, Oct. 1-31, 1 death; Valencia, Nov. 1-14, 5 cases; Vigo, Nov. 1-7, 1 death.
Turkey: Constantinople, Nov. 9-15, 5 deaths.
Zanzibar: Zanzibar, Oct. 24-30, 1 death.

CHOLERA—INSULAR.

Philippine Islands: Manila, Oct. 10-24, 93 cases, 44 deaths; Provinces, Oct. 10-24, 1,534 cases, 864 deaths.
India: Calcutta, Oct. 11-17, 17 deaths; Madras, Oct. 23-30, 4 deaths.
Russia: General, to Oct. 25, 25,509 cases, 11,962 deaths; St. Petersburg, Oct. 26-Nov. 1, 19 cases, 22 deaths; Riga, Nov. 8-14, 2 deaths.
Straits Settlements: Singapore, Nov. 25-31, 2 deaths.

YELLOW FEVER.

Brazil: Manaos, Oct. 25-31, 1 death; Para, Oct. 25-Nov. 7, 5 cases, 5 deaths.
Ecuador: Guayaquil, Oct. 24-31, 1 death.
Mexico: Mexcanu, Oct. 14-21, 1 case; Merida, Nov. 15-21, 1 case.
Martinique: Fort de France, Nov. 1-7, 1 case, 1 death.

PLAGUE.

Brazil: Rio de Janeiro, Oct. 19-25, 8 cases, 6 deaths.
China: Tongshan and vicinity, Aug. 20-Oct. 17, 20 cases, 12 deaths; Oct. 31, still present.
Venezuela: Caracas, Oct. 7, 1 case.

Queries and Minor Notes

ANONYMOUS COMMUNICATIONS will not be noticed. Queries for this column must be accompanied by the writer's name and address, but the request of the writer not to publish name or address will be faithfully observed.

CHOLESTERIN IN PERNICIOUS ANEMIA.

LEAVENWORTH, KAN., Nov. 30, 1908.

To the Editor:—In an editorial, November 21, THE JOURNAL mentioned the use of cholesterin in the treatment of pernicious anemia. I am much interested but am unable to obtain the cholesterin and should like to know of a process by which I might be able to obtain the same from the bile.

CHARLES J. MCGEE, M.D.

ANSWER.—The most common source of cholesterin is cholesterin gallstones. The following is one method of obtaining it. The concretions are finely pulverized and extracted with boiling water and then with boiling alcohol. From the alcoholic extract the cholesterin crystallizes out on cooling and is then boiled with an alcoholic solution of sodium hydroxid so as to saponify the fats which are present. The alcohol is distilled off and the residue extracted with ether, which removes the cholesterin and leaves the soaps behind. The ether is separated and evaporated, leaving the cholesterin in a crystalline form. It can be further purified by recrystallization from a mixture of alcohol and ether (Simons: Physiological Chemistry).

While we find no specific method for preparation from the bile, it is probable that it might be obtained by evaporating the liquid to dryness, extracting with ether and treating the ethereal residue as above described. We believe, however, that the manufacture would present such difficulties as to make it impracticable for the physician or pharmacist, unless he had the facilities of a manufac

turing chemist. The present price of cholesterin is about 50 cents per gram, but the price will doubtless be greatly reduced as soon as there is a sufficient demand. Cholesterin crystallizes in characteristic colorless, transparent plates, with ragged margins and angles. The crystals melt at 145 C. (293 F.). It is nearly insoluble in water, dilute acids and alkalies, but dissolves with ease in ether, chloroform, benzol, and in boiling alcohol. From its ethereal solution it crystallizes out in the form of fine needles. It is also soluble in the essential and fatty oils and is held in solution in the bile by the presence of the bile salts.

EFFECT OF CHLORIN WATER ON CALOMEL.

DAVIS, W. VA., Dec. 7, 1908.

To the Editor:—In THE JOURNAL, November 28, I note an inquiry as to the effect of giving chlorin water and calomel at the same time. I have given many hundred doses of calomel to patients who were taking chlorin water at the same time and none of these patients ever showed any signs of mercurial poisoning.

A. P. BUTT, M.D.

ANSWER.—There is no doubt that chlorin water acting on calomel will convert it into corrosive sublimate. If the chlorin water and calomel were mixed before taking there would be great danger that all the calomel would be converted into the poisonous corrosive sublimate and serious symptoms or fatal poisoning result. The mixture is an incompatible one which should be most scrupulously avoided. In case the calomel is given at a separate time, the effect will depend on the amount of chlorin water in the stomach at the time the calomel is taken and on the dose of the calomel. In this case also care should be exercised, since it is quite possible that chlorin water may have remained in the stomach beyond the time when one would expect it to have passed into the intestine. It is wise to bear in mind the fact that some patients are very susceptible to poisoning by mercury. In explanation of the fact that our correspondent has not seen bad effects from this practice, it should be noted that when chlorin comes in contact with food or liquids containing much organic matter it is reduced and no longer acts on calomel.

INROADS OF WORMS ON FAMILY PRACTICE.

To the Editor:—The following experience has occurred repeatedly in my neghborhood: A child is ailing and the grandmother at once says, "Worms." The family physician smiles at the old lady's diagnosis and prescribes tonics, etc., after frightening the family by asking for specimens of his little patient's sputum and urine. He never asks for specimens of the stool. As the child continues ailing and peevish, the mother yields to the old lady's insistence and gives some patent worm tablets, without the doctor's knowledge, but with the result that the child passes a pint of worms. The confidence of that family in medical science is shaken, and henceforth "grandmother's remedies" reign supreme. "Doctors nowadays have got beyond worms, but we grandmothers know better." When the home remedies fail, the family is ripe for Eddyism. LAYMAN.

ANSWER.—The suggestion that a child's indisposition may be due to worms is so frequently made that it would be strange if it did not prove to be true once in a very great while. Although the circumstances narrated are rare, it is well to bear in mind that the grandmother may be right.

Medical Education and State Boards of Registration

COMING EXAMINATIONS.

ARIZONA: Phoenix, Jan. 4-5. Sec., Dr. Ancil Martin.

ARKANSAS: Little Rock, Jan. 12. Secretaries: Regular, Dr. F. T. Murphy, Brinkley; Homeopathic, Dr. P. C. Williams, Texarkana; Eclectic, Dr. A. J. Widener, Little Rock.

COLORADO: Denver, Jan. 5. Sec., Dr. S. D. VanMeter, 1723 Tremont St.

DISTRICT OF COLUMBIA: Washington, Jan. 12. Sec., Dr. George C. Ober, 210 B. St., S. E.

ILLINOIS: Coliseum Annex, Chicago, Jan. 18-20. Sec., Dr. J. A. Egan, Springfield.

MINNESOTA: Old Capitol, St. Paul, Jan. 5. Sec., Dr. W. S. Fullerton, 214 American National Bank Bldg.

NEW HAMPSHIRE: Concord, Dec. 29-30. Regent, Mr. H. C. Morrison.

NEW MEXICO: Santa Fe, Jan. 11. Sec., Dr. J. A. Massie.

SOUTH DAKOTA: Sioux Falls, Jan. 13-14. Sec., Dr. H. E. McNutt, Aberdeen.

UTAH: Salt Lake City, Jan. 2. Sec., Dr. R. W. Fisher.

VERMONT: Montpelier, Jan. 12-14. Sec., Dr. W. Scott Nay, Underhill.

WASHINGTON: Spokane, Jan. 5-7. Sec., Dr. Kenneth Turner, Walker Bldg., Seattle.

WISCONSIN: Milwaukee, Jan. 12-14. Sec., Dr. J. V. Stevens, Jefferson.

Marriages

W. L. MARSHALL, M.D., Viola, Ala., to Miss Eula Seymour, of Roanoke, Ala., recently.

JOHN E. GLEASON, M.D., to Miss Eleanor Merrill Hovey, both of Detroit, November 24.

RICHARD S. BENNER, M.D., to Miss Marion McClean, both of Springfield, Mass., November 18.

EDWARD H. EGBERT, M.D., to Miss Elizabeth Hawes, both of Washington, D. C., November 26.

JOHN A. WILLIAMS, M.D., to Mrs. Susan Reece Hume, both of Greensboro, N. C., December 3.

J. KING B. E. SEEGAR, M.D., Baltimore, to Miss Elizabeth Bosley, at Towson, Md., December 2.

ARETT C. ARNETT, M.D., Lafayette, Ind., to Miss Ethel McKinstray, of Noblesville, Ind., recently.

CHESTER M. COUNSELL, M.D., Kansas City, Mo., to Miss Ruth Truitt, of Dyersville, Iowa, December 1.

WILLIAM E. GOSSETT, M.D., Buffalo, Wyo., to Miss Laura M. McKown, of Sheridan, Wyo., November 22.

ASHBY M. TAYLOR, M.D., Elsberry, Mo., to Mrs. Mary J. Cornick, of Batchtown, Ill., September 24.

HARRY FIELD PARKER, M.D., Warrensburg, Mo., to Miss Martha Sousley, of Lowville, N. Y., November 25.

ALFRED TURPIN CALHOUN, M.D., Cartersville, Ga., to Miss Emma Thornton, of Talladega, Ala., November 18.

REID HUNT, M.D., U. S. P. H. and M.-H. Service, to Miss Mary Lillie Taylor, of Washington, D. C., December 12.

Deaths

William Whitfield Miller, M.D. University of Virginia, Charlottesville, 1901; afterwards assistant in bacteriology in Columbia University; assistant pathologist and for two years a member of resident staff of the Roosevelt Hospital, demonstrator of pathology at the College of Physicians and Surgeons, Memphis, in 1905; commissioned as assistant surgeon in the U. S. P. H. and M.-H. Service in 1906; and a year later assigned to the Hygienic Laboratory of the Service in Washington; who had made especial investigation of the origin and prevalence of typhoid fever and did much original work in the search for bacillus carriers; who discovered a pathogenic hemogregarine in the blood of white rats, described its life cycle and the mechanism of infection by the digestive tract, a preliminary note of which was published in the Public Health Reports, July 24, the completed work forming Hygienic Laboratory Bulletin No. 46; died in Providence Hospital, Washington, November 24, from typhoid fever, aged 28.

John Thorne Wheeler, M.D. Bellevue Hospital Medical College, New York City, 1876; a member of the American Medical Association; formerly vice-president of the Medical Society of the State of New York and president of the Columbia County Medical Society; who inaugurated the Third District Branch of the Medical Society of the State of New York and was its vice-president; medical expert to, and director of, the division of communicable diseases of the State Department of Health; local surgeon at Chatham, N. Y., for the New York Central Lines, and the Rutland Railway; a member of the local board of education for twenty-seven years; died at his home, December 3, from pneumonia, aged 57.

Joseph Dobbins Davidson, M.D. Vanderbilt University, Nashville, 1882; a member of the American Medical Association; president of the Burnett Sanitarium, Fresno; formerly health officer of Fresno county; and a prominent surgeon; died at his home November 30, from heart disease, aged 46. The Fresno County Medical Society, at its meeting December 1, appointed a committee to prepare resolutions relative to Dr. Davidson's death, and then adjourned as a mark of respect to his memory.

Bethuel Lewis Dodd, M.D. College of Physicians and Surgeons, New York City, 1852; for twenty-five years a practitioner of Newark, N. J., for a time police surgeon for the city, and surgeon-in-chief for the Pennsylvania Railroad, and physician of Essex county; examining surgeon for the Thirteenth and Twenty-Sixth New Jersey Volunteer Infantry during the Civil War; died at the home of his son in Newark, December 7, from senile debility, aged 83.

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George H. Bicknell, M.D. University of Nebraska, Omaha, 1895; a member of the American Medical Association; adjunct professor of ophthalmology in his alma mater; rhinologist and laryngologist to the Clarkson and Nebraska Methodist hospitals, Omaha; a well-known oculist and aurist; died in the Methodist Hospital, Omaha, November 28, from septic pneumonia, following an abdominal abscess of several months' standing, aged 44.

Joseph Maurice Fox, M.D. Jefferson Medical College, Philadelphia, 1852; a Confederate veteran; originally a practitioner of Sedalia, Mo., but later a member of the World's Fair Commission from Montana; general superintendent of the Oregon Railway and Navigation Company; and general manager of the Northern Pacific coal properties; died at the home of his daughter in Victor, Colo., November 28, from cerebral hemorrhage, aged 76.

Mary L. Craffey-Osgood, M.D. New England Female Medical College, Boston, 1865; for thirty-five years a practitioner of St. Louis; who did heroic work in Memphis, Tenn., during the yellow fever epidemics in 1878 and 1879, where she was in charge of one of the emergency hospitals; died at her home, December 3, from heart disease, aged 60.

Franz Muecke, M.D. University of Griefswald, Germany, 1856; surgeon of the Fifty-Eighth New York Volunteer Infantry, during the Civil War; who later filled several governmental positions in Germany, and afterward returned to this country, settling at Rochester, N. Y.; died at his home in that city, November 26, aged 75.

Ella A. Jennings, M.D. New York Medical College and Hospital for Women, New York City, 1878; founder of two Providence Dispensaries for women and children in Brooklyn; and for many years editor of *Humanity and Life;* died in King's County Hospital, Brooklyn, November 29, aged 59.

Calhoun Sams, M.D. Medical College of the State of South Carolina, Charleston, 1860; assistant surgeon and later surgeon of Colonel Black's South Carolina Cavalry in the Confederate service during the Civil War; died at his home in Taylor, Texas, November 22, aged 70.

Charles William Murset, M.D. Cornell University, New York City, 1905; of West New Brighton, Borough of Richmond, N. Y.; house physician at St. Vincent Hospital and the Seton Hospital, Staten Island; died at the home of his aunt in Meriden, Conn., November 28.

Edith A. Root, M.D. Northwestern University Womans' Medical School, Chicago, 1875; a pioneer practitioner of Denver, Colo.; and some-time president of the Denver Clinical Club; died at her summer home in DeKalb, Ill., from pneumonia, November 26, aged 67.

John Armstrong Lindsay, M.D. Western Reserve University, Cleveland, 1856; a member of the American Medical Association, and one of the oldest practitioners of Columbiana county, Ohio; died at his home in Salineville, December 3, from cerebral hemorrhage, aged 75.

Percy Lothrop, M.D. Long Island College Hospital, Brooklyn, 1901; a member of the Samoset Medical Society of Plymouth, Mass.; physician and surgeon to Jordan Hospital; died suddenly at his home in Plymouth, November 20, from heart disease, aged 31.

William J. Earhart, M.D. Homeopathic Medical College of Pennsylvania, Philadelphia, 1864; one of the founders and for several years in charge of the Hahnemann Hospital in that city; was found dead at his home December 4, from heart disease, aged 67.

J. Nathaniel Henry Huggins, M.D. Rush Medical College, Chicago, 1880; a member of the State Medical Association of Texas; and a Confederate veteran; for several years city physician of Georgetown; died at his home November 29, aged 76.

John P. Houston, M.D. Chattanooga (Tenn.) Medical College, 1904; a member of the Medical Association of the State of Alabama; died at his home in Arbacoochee, near Heflin, Ala., December 5, from injuries received by being struck by a train.

Cullen M. Cottongim, M.D. Memphis Hospital Medical College, 1906; of Teague, Tenn.; a member of the Tennessee State Medical Association; was shot and killed as the result of a feud, December 6, aged 37.

Albert B. Pitts, M.D. Washington University, St. Louis, 1882; Tulane University, New Orleans, 1883; was shot and killed in his office in Hazelhurst, Miss., December 10, by a professional rival.

Emery M. Henry, M.D. Southern Homeopathic Medical College, Baltimore, 1892; of Laurel Point, W. Va.; died in the Maryland Homeopathic Hospital, Baltimore, December 2, aged 40.

Solomon S. Carr, M.D. American Medical College (Eclectic), St. Louis, 1882; a member of the first school board of Ardmore, Okla.; died at his home in that city, December 1, aged 76.

Daniel Webster Styer, M.D. Jefferson Medical College, Philadelphia, 1888; a member of the American Medical Association; died at his home in Churchtown, Pa., December 7, aged 45.

John C. Ireland, M.D. Miami Medical College, Cincinnati, 1908; an interne at the German Deaconess Hospital, Cincinnati; died in that institution, November 28, from typhoid fever.

John A. Rega, M.D. University of Heidelberg, Germany, 1848; was fatally burned by the explosion of a gasoline stove in his home in Gouverneur, N. Y., November 29, aged 87.

John W. Acuff (License, Tenn., 1889) for more than forty years a practitioner of Tennessee; died from cerebral hemorrhage at his home in Bellbuckle, November 30.

Louis Philip Knapp, M.D. College of Physicians and Surgeons, New York City, 1891; died at his home in Hackensack, N. J., from liver disease, December 3, aged 39.

Dennis J. Boudreau, M.D. Saginaw Valley Medical College, Saginaw, Mich., 1903; of Newberry, Mich.; died in that place November 19, from typhoid fever, aged 33.

Norval Smith, M.D. Queen's University, Kingston, Ont., 1904; of Bridgeport, Conn.; died in the Bridgeport Hospital, December 1, from cerebrospinal meningitis.

George C. Richards, M.D. University of Nashville, 1868; a Confederate veteran; died at his home in Nashville, December 4, from cerebral hemorrhage, aged 74.

Luther L. Chamblin, M.D. College of Physicians and Surgeons, Baltimore, 1878; died at his home near Philomont, Va., December 2, from paralysis, aged 53.

William Emrich Walker, M.D. Harvard Medical School, Boston, 1902; died at his home in Fairhaven, Mass., November 30, from pleuropneumonia, aged 34.

Jay H. Fordyce, M.D. Medical College of Ohio, Cincinnati, 1879; of Wichita, Kan.; died in the Wichita Hospital, December 3, from heart disease, aged 54.

William Henry Winter, M.D. University of Nashville (Tenn.), 1902; died at his home near Hickman, Ky., November 20, from pneumonia, aged 43.

Frederick W. H. Herbertz (years of practice, Mich., 1900), for thirty years a practitioner of Detroit; died at his home, December 7, from dropsy, aged 62.

Frederick N. Burgess, M.D. Harvard Medical School, Boston, 1865; a veteran of the Civil War; died at his home in Hantsport, N. S., recently, aged 66.

Charles R. Keyes, M.D. Detroit (Mich.) Medical College, 1875; died at his home in Ludlowville, N. Y., December 1, from nephritis, aged 58.

Thomas C. Tipton, M.D. Starling Medical College, Columbus, Ohio, 1852; died at his home in Williamsport, Ohio, November 27, aged 80.

Nelson S. Darling, M.D. Starling Medical College, Columbus, Ohio, 1853; of Laporte, Ind.; died in Wichita, Kan., December 10, aged 77.

Joseph W. Kelly, M.D. Rush Medical College, Chicago, 1894; died at his home in Hudson, Wis., December 2, from pneumonia, aged 38.

Nathaniel L. Story (License, Iowa, 1886); for thirty years a practitioner of Iowa; died at his home in Mitchell, November 19, aged 64.

John Homer, M.D. Harvard Medical School, Boston, 1865; of Newburyport, Mass.; died at his home, November 24, aged 73.

M. D. Alford, M.D. Vanderbilt University, Nashville, 1883; of Roberson Fork, Tenn.; died at his home, November 22, aged 56.

George H. Voss, M.D. Hahnemann Medical College, Chicago, 1899; died at his home in Detroit, December 5, aged 41.

John H. Schriefer, M.D. University of Louisville, 1891; died at his home in Prospero, Ind., November 20, aged 47.

Book Notices

ATLAS OF CLINICAL SURGERY, with Special Reference to Diagnosis and Treatment. By Dr. Ph. Bockenheimer, Professor of Surgery in the University of Berlin. English Adaptation by C. F. Marshall, M.D., F.R.C.S., Late Assistant Surgeon to the Hospital for Diseases of the Skin, London. Three Volumes. Flexible Leather, with illustrations. Price, $24.00 per set. New York: Rebman Co.

The nature, scope and aim of this work is indicated by the following extract from the author's preface: "Those who are acquainted with the history of medicine know that, even in ancient times, it was sought to represent pictures of disease by the aid of plastic art. No wonder, then, that, at the present day, when medicine has made such great progress in all domains, we take advantage of all measures which may facilitate the study of morbid conditions. The rich material of von Bergmann's clinic, which has been placed at my disposal, renders it possible to give plastic representations of all surgical diseases which are suitable for production in this way. The models were executed with greatest skill by F. Kolbow in the pathoplastic institute at Berlin, and have proved of much value in the teaching of clinical surgery. The models have been reproduced by the four-color process, which gives a more natural appearance than can be obtained in reproduction with water colors. In this work clinical pictures have been represented with a view to assist the practitioner in diagnosis and to give the student a survey of the more important surgical diseases. For this purpose, the malignant and benign tumors, a number of pyogenic, tuberculous and syphilitic conditions which are common in surgical practice, have been figured and described, along with numerous other cases which belong to the domain of surgery."

The tendency in anatomy of late has been to employ atlases presenting thus a clear picture of structures and their relations. The atlases of anatomy written by Spalteholz and Toldt, have proved eminently satisfactory to teachers in presenting the subject to students. Bockenheimer has employed this method in his clinical atlas, presenting a picture of a typical lesion, to which is appended a short description of the clinical course of the disease, differential diagnosis, prognosis and treatment. The book bears the same relation to the subject of clinical surgery that the atlas of Spalteholz does to that of gross anatomy. The four-color process reproduces faithfully the lesions in their original colors. The descriptions are short, but clear. Their value is increased by the fact that in most cases the experience of but a single authority is given. The translation, although somewhat literal, is very readable. The book is destined to occupy the same place in clinical surgery that the atlases prepared by Spalteholz and Toldt do in anatomy.

DIE KOMPLIKATIONEN DER STIRNHÖHLENENTZÜNDUNGEN. Von P. H. Gerber, a.o. Professor und Direktor der Königl. Universitäts-Poliklinik für Ohr- und Nasenkranke in Königsberg i. Pr. Paper. Pp. 457, with illustrations. Price, $3.00. Berlin: Verlag von S. Karger, 1909.

This book contains an exhaustive critical study of all that is known regarding those complications of inflammation in the frontal sinus which call for operative interference. It includes a study of the normal anatomy and histology of the frontal sinus, the methods of infection, the bacteriology and a detailed study of the various pathologic changes in the membranes and walls of this sinus. The latter is treated under the following subheadings: "Periostitis and Ostitis," "Antritis Frontalis Abscedens," "Antritis Frontalis Dilatans," "Pneumatocele," "Cholesteatoma" and "Osteomyelitis." Under "Organ Complications" are discussed the oculo-orbital complications and the intracranial complications. The concluding chapters contain a general discussion of etiology and therapy.

TEXT-BOOK OF HUMAN PHYSIOLOGY. By George V. N. Dearborn, A.M., (Harv.) Ph. D., M.D. (Col.), Professor of Physiology in the Medical and Dental Schools of Tufts College, Boston. Cloth. Pp. 550, with illustrations. Price, $4.00. Philadelphia: Lea & Febiger, 1908.

In this book we have an attempt to present the important facts of physiology in sufficient detail for the needs of students of medicine and dentistry without going to the extreme length so noticeable in a number of works used in the medical schools of this country. Dr. Dearborn appears to possess a proper sense of proportion, and has avoided padding his book by the introduction of matter of secondary importance only and by quoting a long aray of literature references, which for the freshman or sophomore are often worse than useless, since they frequently confuse, rather than assist. A text-book for beginners in medicine need not be a complete reference manual. The book is divided into thirteen chapters, treating of the topics usually included in works on general physiology. These chapters are well illustrated, a fair proportion of the illustrations being apparently new. Chapter 12 is devoted to a discusion of mental processes and the relations of mind and body. The extent of this discussion is somewhat unusual in a text-book of this character, but it can not be said to be out of place. In a lengthy appendix full directions are given for performing a large number of important illustrative experiments, so that in a sense the book is likewise a laboratory manual.

In the main the style and treatment are satisfactory, and what Dr. Dearborn has to say is presented in a tangible and straightforward manner, which in a text for beginners is always of the first importance. But, unfortunately in his efforts at simple elucidation he has frequently sacrificed accuracy. An illustration of this is found in the color plate facing the title-page, which is described as a diagram of cell metabolism. Such a sketch as a blackboard illustration, with proper explanation of its tentative character and limitations, might be very helpful, but as presented it conveys a wrong impression as to the extent of our knowledge on several points. The same general objection may be urged against the diagram on page 27. While this is described as "highly diagrammatic," it must still be urged that the impression it would convey to the average student would be an erroneous one. There are also a number of illustrations which seem to have but little relation to matters presented in the text. The specialist in histology, embryology or chemistry will be able to pick out a number of departures from strict accuracy in the discussions, but most of these appear to be of minor importance, and may be, perhaps, overlooked in a first edition. On the whole the book should find a place in the instruction of medical students.

WALSH'S PHYSICIAN'S COMBINED CALL-BOOK AND TABLET. Monthly Form. Thirtieth Edition. Flexible Leather, with Pocket and Special Memoranda. Price, $1.50. Washington, D. C.: Ralph Walsh, M.D.

WALSH'S PHYSICIAN'S HANDY LEDGER. A companion to "Walsh's Physician's Combined Call-book and Tablet." Cloth. Pp. 600 (for 600 patients). Price, $3.50. Washington, D. C.: Ralph Walsh, M.D.

THE MEDICAL RECORD VISITING LIST for 1909. Flexible Leather, with pocket and special memoranda. New Revised Edition. Price, $1.50. New York: William Wood & Company.

THE PRACTITIONERS' VISITING LIST for 1909. Flexible Leather, with flap, pocket and pencil, calendar for two years, and dose list and other memoranda. Price, $1.25. Philadelphia: Lea & Febiger.

The three visiting lists are all handy, compact, durable and well made, and will prove of great labor-saving value to the practitioner. The Medical Record and the Practitioner's books are issued in various forms, according to the size of the practice and the preference of the user. As to data included, all are about alike. The data are most valuable for the physician to have with him at all times. The Walsh call-book is arranged for the record of a patient through a whole month without rewriting the name. It is intended to be used in connection with the ledger in which a page is given to each patient, the two books being intended to be used in combination at a minimum expense of time and yet with the advantage of being able to see without difficulty the charges and the nature of the various items of attendance for the whole year.

PAIN, Its Causation and Diagnostic Significance in Internal Diseases. By Dr. Rudolph Schmidt, Assistant in the Clinic of Hofrat von Neusser, Vienna. Translated and Edited by Karl M. Vogel, M.D., Instructor in Pathology, College of Physicians and Surgeons, Columbia University, and Hans Zinsser, A.M., M.D., Instructor in Bacteriology, College of Physicians and Surgeons, Columbia University. Cloth. Pp. 326, with illustrations. Price, $3.00. Philadelphia: J. B. Lippincott Co.

This book deals with the diagnosis of visceral diseases, starting with the symptomatic pain which may accompany them. The discussion of pain, its quality, its location, its cause and its significance in individual diseases is preceded by chapters on "The Sensation of Pain," "Functional Modifi-

cations of Pain," "Topography in Its Relation to Pain," and "Quality and Times of Occurrence." About 30 pages are devoted to the nervous system, a brief chapter to organs of motion, about 120 pages to diseases of the digestive system, including the liver and pancreas, about 30 to the urinary system and spleen, and finally a brief chapter to the respiratory and circulatory systems. The pages which treat of the digestive system are the most satisfactory for the diagnosis of painful diseases of this system is considered very fully.

The details of Schmidt's views can not be gone into in this review, but to give the reader an idea of his style and opinions on one subject, the following is selected from the 20 pages devoted to pain in round ulcer of the stomach, in which he considers fully the diagnosis of the disease. Correctly, as we believe, Schmidt lays more stress on hyperchlorhydria than most do. He says: "I consider hydrochloric hyperacidity is very far from frequent in ulcer and have, furthermore, been able to convince myself that in undoubted cases of the lesion even large doses of dilute hydrochloric acid have not increased the pain. There may exist what I think is rather frequent, namely, a hyperesthesia to hydrochloric acid accompanied by even subnormal hydrochloric acid values." Much weight is attached to the stretching of the stomach walls by flatus as cause of pain in ulcer. The whole subject, however, is most interestingly considered.

Schmidt attaches only moderate diagnostic value to the time after eating when pain appears. It may occur quickly after eating in pyloric ulcer or be much delayed. He does attach importance to the promptness with which it can be relieved by anesthesia or cocain. If the ulcer is in the stomach or esophagus, pain disappears in about fifteen minutes after the drug is administered.

Students of diagnosis will find this book invaluable, and will appreciate Schmidt's accuracy, fulness of statement and good judgment. The book is well translated; the few lapses from idiomatic English are negligible.

SURGICAL MEMOIRS AND OTHER ESSAYS. By James G. Mumford, M.D., Instructor in Surgery, Harvard Medical School. Cloth. Pp. 358, with Illustrations. Price, $2.50. New York: Moffat, Yard & Co., 1908.

This is a group of addresses and papers, some already published individually in different journals and books, as well as others not heretofore printed. The introductory chapter is a historical review of surgery, and appeared as the first chapter of Keen's "Surgery." This narrative of surgery includes brief sketches of some of the historical characters in medicine, of those who have made American surgery, and a more extended account of Lord Lister and his work. "Teachings of the Old Surgeons" is an interesting chapter, critically reviewing the work and views of the surgeons of old. It shows that there was some good philosophy and not a little sound reasoning in the surgical literature of the past, and that good judgment was used in much of the work of the old surgeons. Sketches of Sir Astley Cooper, John Collins Warren and Jacob Bigelow occupy chapters. In an address, "Boston Medicine One Hundred Years Ago," is a delightful sketch of that remarkable, but little known character, little known, that is, as a medical man, Dr. Samuel Gridley Howe, to whom the blind and feeble-minded owe so much. "Studies in Aneurism" is a historical account of this condition and the methods of its cure, leading up to and including a description of the brilliant yet simple method originated by Matas of New Orleans. "Present Problems" and "The Nurse's Vocation" are addresses to nurses. The volume closes with a short chapter on "History and Ethics in Medicine."

These essays are all delightful and interesting; but more important, they are instructive and stimulating to good work.

A TEXT-BOOK OF DISEASES OF WOMEN. By Charles B. Penrose, M.D., Ph.D., Formerly Professor of Gynecology in the University of Pennsylvania. Cloth. Sixth Edition. Pp. 550, with Illustrations. Price, $3.75. Philadelphia: W. B. Saunders Co., 1908.

This volume, originally written with particular regard for the demands of the medical student, remains in this respect unchanged. The subject matter is compactly and concisely presented, and the price is attractive to the average undergraduate. In general it may be said that the reader is not confused by abstract theorizing or by a complex presentation of the various subjects discussed. Only one plan of treatment for each disease is considered, and only such facts relating to anatomy, physiology and pathology are mentioned in any detail as seem necessary for the elucidation of the point being made. The arrangement of the subject matter has not been changed. Thus Penrose takes up in detail the treatment of his operative procedures subsequently to his consideration of the various surgical diseases. This is, again, a distinct advantage. The various neoplasms are treated in an adequate manner and the plastic work is described according to the methods employed by the best teachers.

Miscellany

Professor Martin's Impressions of America.—Our Berlin correspondent has recently described in detail (THE JOURNAL, October 10, page 1246, and October 31, page 1523) the manner of organization of the profession in Germany in compulsory "public" medical councils and in "private" associations. Prof. A. Martin and Prof. A. E. von Rosthorn, the editors of the *Monatsschrift für Geburtshülfe und Gynakologie*, have been guests of the American Medical Association at annual sessions. Professor Martin, in an editorial in the October number of his journal, pays a high tribute to the scientific and other aspects of the Chicago session, remarking in conclusion: "The American Medical Association represents in an extremely powerful form our various organizations for scientific and economic purposes. In its organization it forms a mighty force which issued from the private initiative of the physicians of the United States, and is working with insight and power to raise the medical profession in every direction. It was a delight to see our colleagues at work also in this line. This organization is certainly not the least factor in the vast medical and educational development of the last twenty-one years which I had ample opportunity to observe during my trip across the continent to the Pacific coast." He commends the rules of membership in the American Gynecological Society, whose annual meeting he also attended, and comments on the management of the medical colleges, remarking that the faculties in American colleges are not composed, as in Germany, each of one or two regular and one or two assistant professors and privat docents, but of a very large teaching force. The professors not only divide among themselves the theoretical and practical instruction but also change frequently in the charge of the hospital services. He has been able to watch this great development along all lines during the twenty-one years since he has been coming to this country, but states that the specialty of obstetrics has only a few representatives. "Instruction in obstetrics is not given even approximately as in Germany, except at a very few points. I believe that only Philadelphia, Baltimore, Chicago and New York have large maternity hospitals connected with the medical colleges. Generally there are only a few beds for the lying-in department. Instruction is almost exclusively theoretical; practical instruction is offered in the polyclinics, with which a few prominent instructors are connected and where they work with commendable zeal. There is an absolute lack of pregnant women as teaching material except where there are Slavic and oriental immigrants. 'Gynecology' seems to mean in the United States merely 'abdominal surgery.' Only a few of the prominent gynecologists pay any attention to the so-called minor gynecology, but all seem to regard operations on the appendix, gall bladder and kidneys as pertaining to their domain. This explains the exclusive choice of abdominal section in preference to vaginal operations. Under these conditions it was noticeable that several of the papers at the meeting were devoted to obstetrics or kindred subjects." Martin remarks further that manikins for teaching purposes do not seem to be much known, "probably because of the difficulty of obtaining the cadaver models." He deplores further the prevailing lack of training in vaginal operations, ascribing the neglect of the vaginal route in large measure to the custom of removing the appendix when the abdominal cavity is entered for any reason.

Coliuria and Colitoxemia.—Under these names, F. Kornfeld (*Beiblatt z. d. Mitt. d. Gesellsch. f. inn. Med. u. Kinderh. in Wien*, 1908, vii, No. 5) calls attention to a subject the importance of which had not been fully appreciated prior to his earlier articles published in 1904 and 1906, viz., the exclusive infection of the bladder by the colon bacillus and the symptoms it produces. The freshly evacuated urine, in the cases here considered, is uniformly turbid from the included colon bacilli, other species not being present; and the condition is to be sharply distinguished from the bladder inflammation caused by mixed infection. It is a much less frequent disorder, is certainly not a preliminary stage, and is not associated with or followed by a pyelitis or cystopyelitis. Its characteristic features—the immense amount of bacteria, the constant acid reaction of the urine, which lasts for a long period in exposed vessels after evacuation, and the peculiar stale, carrion-like, but never ammoniacal odor are all different from those of any other condition. Inoculations on animals sometimes fail of effect, sometimes cause local abscess, and in rare cases may cause fatal embolism. In all cases an increased turbidity follows milking of the prostate gland, but the colon cultures remain the same. The duration is long, even two decades or more; the origin of the bladder infection is considered to be mainly from the bowel through the intervening tissue or by way of the lymphatics. Another characteristic feature is the sudden febrile attacks which occur in many of the cases, resembling the inception of an acute infectious disorder, with chills, high temperature, prostration, anorexia, vomiting, etc., which, nevertheless, entirely subside in twelve or twenty-four hours, leaving the patient temporarily somewhat prostrated but otherwise soon in his usual health. These, Kornfeld considers, must be recognized as a special colitoxemia. Kornfeld here excludes from consideration a form of hematogenous colon bacillus infection, which frequently has the kidney pelvis as its point of entrance, and which also begins with symptoms suggesting septicemia; in his article he takes account of the coliuria only in the limited sense above described.

Heberden's Nodes.—L. Wick (*Beiblatt z. d. Mitt. d. Gesellsch. f. inn. Med. u. Kinderh. in Wien*, 1908, vii, No. 5) in a rather elaborate paper sums up his conclusions as to the nature, etiology, etc., of these growths as follows: Heberden's nodes are the expression of a trophic disturbance, a degeneration, which develops on the basis of a definite predisposition as an essential condition. As far as now known, the components of this predisposition are, senescence, a neuropathologic tendency (Anlage), but before all others, the decrease or disappearance of the function of the sexual glands; this last is in many instances perhaps the only determinable factor. There may be, he admits, other contributing conditions among which are chronic rheumatism and gout, but it need not be identified with them. The nearest relations of the condition seem to be with arthritis deformans, but Wick is not inclined to consider it a phase of that disorder. The trophic skin changes and the sensory or vasomotor disturbances, point to the nervous system as participating largely in the disturbance. As regards treatment, he does not express himself very hopefully. He has never seen a spontaneous cure. The use of organotherapy would naturally be suggested with his view of the etiology and it has been experimented with by Badt, but apparently without marked results. Its value would be most probable in the incipiency of the condition. Von Noorden has reported good results from the use of hot hand baths and electricity and suggests the Bier hyperemia treatment as sometimes worth trying. The predisposing causes, gout, rheumatism, etc., are of course to be attended to as far as possible.

Influence of Temperature on Calf Vaccine.—A. B. Green, in the *Journal of Hygiene*, discusses this subject in detail and concludes that: (1) Temperature influences the rate at which glycerinated lymph deteriorates in accordance with the law of Arrhenius, expressing the effect of temperature on chemical action: the rate of deterioration increasing three times per 10 degrees rise in temperature. (2) Dry powdered calf vaccine in sealed glass capillary tubes still gave rise to typical vesicles after exposure to a temperature of 100° C. for from 5 to 10 minutes. (3) The vaccine virus can withstand positive osmosis for 24 hours or more, and negative osmosis for 8 weeks or more, at room temperature. (4) It appears doubtful whether the vaccine virus will pass through a Berkefeld V filter even when a stored vaccine emulsion is used for filtration. If any virus does pass through, it only does so exceptionally and in small quantities. (5) When a glycerinated vaccine emulsion is filtered, white flocculi frequently form in the filtrate. These are at first minute, but subsequently adhere and form a macroscopic sediment. This sediment, when inoculated on calves, does not cause vesiculation. Microscopically these flocculi, in hanging drop preparations, resemble the vaccine bodies described by one or more observers.

Sanitation in Africa.—It is claimed that for a West African town, Bathurst, the capital of Gambia, may be said to be very presentable. The streets are wide and clean, and mosquito and sanitary regulations are properly enforced, while a new departure has been made in putting representatives of the Mandingos and Joloffs on the Board of Health, apparently with satisfactory results. There were several outbreaks of smallpox in the colony during the last year; over 4,700 persons were vaccinated, and the natives, who at first refused to allow their children to be vaccinated, soon recognized its utility and sought to have it done. An attempt is being made to get a rough idea of the vital statistics of the people, and the chiefs were given red and blue books and instructed to mark in them all births and deaths in their district. Although these statistics are probably not too accurate, they will doubtless improve. The Bathurst death rate is only 31.6 per mille; but the climate is very trying during the rainy season from July to October, and in the dry season the thermometer may range from 56 F. in the early morning to 100 at midday.—*British Medical Journal.*

Society Proceedings

COMING MEETINGS.

American Assn. of Anatomists, Baltimore, Dec. 29-31.

PHILADELPHIA COUNTY MEDICAL SOCIETY.

Regular Meeting, held Oct. 28, 1908.

The President, Dr. ALBERT M. EATON, in the Chair.

SYMPOSIUM ON TYPHOID FEVER VARIATIONS.

Abdominal Complications of Typhoid from a Surgical Standpoint.

Dr. FRANCIS D. PATTERSON: The importance of the subject is best indicated by its frequency as shown by statistics. Vaughan states that the frequency of perforation has been variously estimated from 1.3 to 11 per cent. I have collected from literature a total of 21,215 cases of typhoid in which 671 perforations occurred, a frequency of 3.16 per cent. Figures of the Census Bureau show the average mortality from typhoid fever during the years 1901 to 1905 inclusive in the registration area to be 10,458 deaths per year. In 1906 this was increased to 13,160 deaths, these figures being exceeded only by those of six other countries. Pennsylvania contributed 3,917 deaths from the disease in 1906, and in Philadelphia from Jan. 1, 1903, to Sept. 15, 1908, there were 32,218 cases of typhoid fever, with 4,930 deaths. One death in every every three was due to perforation, which would give 1,643 perforative cases in Philadelphia alone during that time. Statistics show that perforation is as frequent in children as in adults; the existing causes are as a rule mechanical. Case reports show that perforation may occur during any period of the disease and in convalescence, but is most common between the second and fifth week inclusive. While in the majority of cases the lesion is found in the ileum, no portions of the intestinal tract are exempt. The lesions in typhoid are usually

on the free border of the intestine opposite to the mesenteric attachment. The blood supply here being relatively poor, there is a predisposition to necrosis and perforation. When this takes place it is usually into the free peritoneal cavity and not between the folds of the mesentery. The symptoms should be divided into those occurring at the time of perforation, and those of the succeeding peritonitis. There is no pathognomonic sign of perforation. An accurate diagnosis is difficult in many cases. The prognosis of every case of perforation depends on the celerity with which operation is performed and the bacteriology of the resulting peritonitis. The streptococcic infections are usually fatal, while the chances of recovery are good in those due to the colon bacillus [The technic of the operation was described in detail and the report made of 842 cases with 609 deaths, a mortality of 72.32 per cent., which included the 362 cases reported by Harte and Ashhurst in their classical papers.] There is need of a close cooperation between physicians and surgeons in the management of cases of typhoid fever. The literature shows that typhoid fever patients stand operative interference better than would be expected.

Viability of the Typhoid Bacillus in the Body.

DR. NORMAN B. GWYN: Two phases may be recognized: 1, the period of the primary infection and convalescence—about six months; 2, the period of post-typhoid lesions or bacillary persistence—possibly the remainder of the patient's life. In the first period the viability is really more of a luxurious proliferation, the bacilli being readily found in the blood and almost every part of the body, giving rise to infections of various organs and parts. At that time bacilli lodge in the gall bladder and urinary bladder living there for months or years, and possibly from these parts come most of the late typhoid and post-typhoid lesions, the gall bladder discharging into the bowel regularly thousands of bacilli which may enter the circulation and lodge in any part; or, again, under some circumstances, infection from the urinary bladder may take place. This, briefly, may be the explanation of many of the supposed instances of viability in which 18, 20 or 30 years after an attack of typhoid, bone lesions, gall-bladder infection due to *Bacillus typhosus* occur, or persistence of typhoid bacilli in stools is seen.

Papers were also read by Dr. J. Torrence Rugh on "Joint Complications in Typhoid Fever," and by Dr. E. J. Beardsley on "The Genitourinary Complications of Typhoid Fever." Dr. Francis W. White's report of a case of typhoid spine will appear in THE JOURNAL.

DISCUSSION.

DR. JOHN A. MCGLINN: I agree that it is exceedingly difficult to diagnose typhoid perforation. I always feel that it is much better to operate early at the risk of a mistake in diagnosis than to wait for an absolutely sure diagnosis and find the condition beyond hope of recovery.

DR. L. JAY HAMMOND: I feel that the present high mortality in typhoid perforations will be lowered by prophylaxis rather than by operation or the let-alone method of treatment. From a careful investigation of the subject made a year or so ago I was led to the belief that in the majority of cases of typhoid perforations there had been adhesions due to pre-existing disease, and that in all probability the interference with normal intestinal action, blood supply and peristalsis was a prominent factor in ulceration and subsequent perforation. We are told that during the first week of typhoid fever there are no symptoms referable to the abdomen *per se*. Therefore, given a case of typhoid fever during the first week of the disease with the symptoms prominently those of the abdomen we should strongly suspect an inflammatory condition, probably due to adhesions.

DR. T. TURNER THOMAS: I have seen one case of typhoid spine, that of an old man convalescing from typhoid fever. He was taken with severe pain in the back, localized after three or four days in the lumbar spine. The painful condition lasted for a long time, with gradual improvement, and now, after more than three years, there is still a little pain and the back is weak.

DR. HENRY BEATES, JR.: Might not the fact that the typhoid bacillus always dies in rabbit serum give us a method of treatment which might result in destroying the bacillus of typhoid fever?

DR. EDWARD J. G. BEARDSLEY: When Gibney reported his case and introduced the term "typhoid spine," he distinctly stated that the term carried with it no pathologic implication; but his suggestion was that a periosteal lesion, inflammatory in character, and caused by the presence of the typhoid bacillus, would explain the condition. Dr. Osler, on the other hand, was inclined to the belief that the condition was a neurosis, and it remained for McCrae to point out that in every case in which an examination was made by *x*-ray, a pathologic lesion could be discovered. Of one thing we can feel sure, and that is that the recovery of the patient depends to a great extent on a correct diagnosis being made and suitable treatment instituted. Many cases of typhoid spine are considered to be lumbago, rheumatism, intercostal neuralgia, tuberculosis of the spine, etc., and faulty treatment advised before the true nature of the disease is discovered. I think it is well to point out that in all cases there is an actual lesion of the periosteum, the bone or the cartilages.

DR. J. TORRENCE RUGH: I have a case at present in which operation is necessary to correct a deformity following injury which occurred in a typhoid patient and in whom there is a typhoid spine, and yet I am afraid to operate for fear of relighting the original suppurative inflammation which followed the typhoid infection. When we find that the typhoid bacillus is viable from ten to sixty years in the human body it becomes a matter of the greatest importance to the surgeon who contemplates operation. Typhoid spine is recognized by orthopedic surgeons as a distinct form of infection similar to the infection of the joints, and as a condition which takes on different characteristics in different patients.

BOSTON MEDICAL LIBRARY MEETING.

Regular Meeting, held Nov. 18, 1908.

DR. FRANKLIN G. BALCH in the Chair.

Cancer of the Bladder.

DR. ARTHUR T. CABOT: The two things most important are early diagnosis and the removal of the tumor with wide margin. Though early discovery is often difficult, it is rendered possible by the cystoscope. In case of doubt two cystoscopic examinations should be made. Often the disease is far advanced before the patient is seen. Therefore early symptoms should be watched for. These are intermittent hemorrhage, pain, frequency and urgency of micturition. Hemorrhage is the most constant early symptom, while frequent micturition, which oftenest sends the patient to the doctor for advice, is often only noticed when the disease is already well advanced. Under the microscope a urinary sediment which shows blood, particles of villi and clumps of atypical epithelium helps in the diagnosis. Cystitis is a medical disease, but is often referred to the surgeon, who will wisely look into every bladder where there is the slightest doubt. Probably all papillomata become cancerous unless early treated and removed. This may be done through the cystoscope, but incompletely. It is better to make an open incision and remove with a wide margin by actual cautery. Mayo recommends that the tumor itself be lightly cauterized in order to avoid possible contamination of healthy mucous membrane. Careful search should be made for any other tumors and watch kept for other symptoms. Cancer only slowly invades the neighboring lymph glands. Operation on the anterior wall or the fundus is easier than at the base, but the disease is most frequently located at the base. The intraperitoneal route is to be preferred. It gives more room and allows the whole thickness to be removed. If glands are removed because diseased, probably the disease is already too far advanced. The free wall may be removed to a surprising extent. Operation at the base is difficult, mortality is high and cure doubtful. Recurrence is frequent, but operation may be successful with small growths. One of the most serious problems is the care of the ureter, whose mouth is often involved in the operation. Reimplantation is difficult. Temporarily it may be put at the upper

angle of the wound. Later a nephrostomy may be done and drainage established. Palliative operations are useful. Curetting and cauterizing often yield long periods, even years, of relief. Double nephrostomy has been proposed in order to give the bladder rest.

DISCUSSION.

DR. F. S. WATSON: I have made a study of all cases reported up to 1908, a total of 683 cases. The cures in the supposed benign cases have been few and the deaths following operations in the malignant cases many. Therefore, probably many, perhaps all, of the benign cases have been but the beginnings of cancerous growths and have recurred as such when not thoroughly removed. The high mortality seems due to lowered vitality, shock and renal infection. To reduce shock and the chance of renal infection a preliminary double nephrostomy should be done. Do not try to implant the ureters. By using a belt it is possible to keep the patient dry.

DR. F. B. HARRINGTON: I favor the intraperitoneal route for operation as I outlined it in 1893 and which I have developed since then.

DR. PAUL THORNDIKE: I have had fifteen cases of tumor of the bladder; none of these was benign and twelve were so disseminated that only total extirpation could be considered. Of the three patients operated on, one had recurrence on the posterior wall in nine months, one on the side wall in five months and one was lost track of. Palliative operations do not prolong life, but do greatly increase comfort, so that the patient dies of the cachexia and for long periods is free of pain. The intraperitoneal route is preferable to the suprapubic and nephrostomy to ureteral implantation.

DR. HUGH CABOT: I believe in palliative treatment. A study of twenty-five cases shows that patients so treated have on the average a year of perfect comfort and six months more of comparative comfort. One of my patients had great relief for eight years. Those cases which heal rapidly do best in this respect.

Cystitis.

DR. ARTHUR L. CHUTE: The subject may be divided into (1) acute cystitis, (2) chronic non-tuberculous and (3) chronic tuberculous. The acute form is the common one and due oftenest to extension from the urethra or kidney, to catheterization or to infection through the blood stream or lymphatics. Bacteriuria does not necessarily cause cystitis. It is specially important in each case to determine the predisposing cause. Still more important is this in chronic cases. Chronic cystitis is a form without the urgent features. Pus, however, is always present. Diagnosis from chronic kidney suppuration may be difficult. Cystoscopy may be necessary or even catheterization of the ureters. If after a bladder irrigation the urine next passed contains much less pus the diagnosis of cystitis is confirmed. Search should be made for the predisposing cause, such as disease of the kidney, antiflexed uterus, stone in the bladder, etc. Prognosis is good only if this cause can be removed. If untreated, cancer or fatal pyelonephritis may result. The lesion in the bladder wall is apt to involve deeper layers than the acute process. Suprapubic cystotomy may be necessary. Urinary antiseptics are of doubtful value. Irrigations are valuable but have their dangers. Where other methods have failed, opsonic treatment is likely also to fail. The tuberculous type occurs mostly in young adults for no known reason, is secondary usually to kidney disease, and gradually grows worse. Diagnosis is made by finding the tubercle bacillus. Treatment is directed first to the tuberculous kidney and afterward to the cystitis.

DISCUSSION.

DR. EDGAR GARCEAU: In diagnosis of cystitis hemorrhage is the principal symptom. Bimanual examination of women will sometimes show the presence of infiltration in the floor of the bladder and suggest malignant disease. Catheterization is a delicate operation, the soft rubber catheter being much safest. After nephrostomy it may still be wise to treat the bladder and not merely rely on rest. In chronic cases the patients are often helped and may even be cured by change of climate and attention to hygiene. Cystotomy ought to be done much more often than is now the custom.

Medicolegal

Corporations Other than Hospitals, Etc., Are Prohibited from Advertising to Practice Medicine.

The Court of Appeals, the court of last resort in the state of New York, has, in the case of People vs. John H. Woodbury Dermatological Institute, affirmed the judgment of conviction of the defendant of the crime of unlawfully advertising to practice medicine in violation of the provision of the statute of that state that "any person not a registered physician who shall advertise to practice medicine, shall be guilty of a misdemeanor."

The court says that it was argued that the context in the general act of 1907 regulating the practice of medicine, which contains the prohibition against advertising to practice medicine by any person not a registered physician, indicates conclusively that "any person" therein mentioned could not possibly have been intended to mean "any corporation."

The great difficulty in the adoption of a construction making this statute apply to corporations grows out of the existence of hospitals, dispensaries, and similar corporate institutions, which are unquestionably authorized by law to practice medicine, although, of course, only through the agency of natural persons who are duly registered as physicians. But the objects for which the defendent was incorporated were stated in the certificate of incorporation to be: "The carrying on of business of manufacturing chemical preparations and printing, publishing and selling books and pamphlets, relating to the same and advertising same." There could be no suggestion or pretense that this was a hospital corporation or dispensary.

In reference to hospitals and dispensaries, it could hardly have been the intention of the Legislature in the act of 1907 to prohibit such corporations from advertising to do what they might do lawfully—that is to say, from advertising to practice medicine; yet it was argued that, if the court held that the act of 1907 made it a misdemeanor for any corporation (making the term "person" embrace a corporation) to advertise to practice medicine, it must also hold that incorporated hospitals and dispensaries fell within the prohibition. If this were the necessary result of the construction adopted, it would furnish a strong reason for rejecting that construction.

It seems to the court, however, that it can affirm this judgment without in any wise denying the lawful right of hospitals, dispensaries, and similar corporate institutions to advertise their readiness to exercise their lawful functions; and this simply for the reason that the general medical law of 1907 is obviously not intended to apply to the case of such corporations at all. In other words, the prohibitions therein contained against the practice of medicine without lawful registration in New York state, or in violation of any of the provisions of the statute, or against advertising by any person not a registered physician, were not intended to apply and plainly could not reasonably be held to apply to corporate bodies which by the express provisions of other statutes are authorized to carry on the practice of medicine on compliance with their provisions and without registration.

The incorporation of hospitals is provided for in Section 80 of the membership corporations law of New York. An institution of this character, possessing legislative authority to practice medicine by means of its staff of registered physicians and surgeons, comes under the direct sanction of the law in so doing, and by the plainest implication, under well-settled rules of statutory construction relating to enactments dealing with the same general subject matter, is excepted from the operation of the act of 1907 under which the defendant was convicted.

It was suggested in behalf of the defendant that to attribute to the Legislature a design to prohibit a corporation which was not registered as a physician from advertising to practice medicine was to charge the lawmakers with doing an absurd act, inasmuch as it is impossible under the law for a corporation to register as a physician. There is nothing in this point. It might just as well be urged that there is no need of a law prohibiting a minor from voting, since everybody knows that

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a minor has no legal right to vote. This fact does not prevent illegal attempts on the part of minors to exercise the right of suffrage, and the facts in the present case show that a corporation may undertake to practice medicine without authority of law.

Cancer of the Womb Not a Disease Peculiar to Women.

The St. Louis Court of Appeals says that in the case of Shuler vs. American Benevolent Association, an action on a policy of health insurance, the policy provided that insurance under it should not extend to or cover diseases peculiar to women, and it was contended that the sickness of the insured, being alleged to be cancer of the womb, was a disease peculiar to women. But the court does not agree with that contention. The disease itself, the court says, was not shown and, in fact, could not have been shown, to be peculiar to women, for it is common knowledge that it attacks men as well as women, and the fact that it at times shows itself in an organ possessed by women and not by men does not make it a disease peculiar to women, for it could not be peculiar to women unless men are immune from its ravages. The court thinks that the correct interpretation of the provision in the contract, exempting the association from liability for sickness caused by diseases peculiar to women, covered only such diseases as women have, and from which men are immune.

Local Rights Regarding Establishment of Contagious Hospitals.

The Supreme Court of Michigan says, in the case of Summit Township vs. City of Jackson, that the charter of the city, as revised in 1905, provides that the council may purchase the necessary lands and erect thereon, or otherwise provide, one or more hospitals, either within or without the city limits, and provide for the care and treatment therein of such sick and diseased persons as the council or board of health of the city shall deem proper, and, by direction of the council or board of health, persons having malignant, infectious or contagious diseases may be removed to such hospital, and there detained and treated, when the public safety may so require.

The township contended that this should be construed as requiring the city to obtain the consent, license, and permission of the proper township authorities, before it could maintain a smallpox or other hospital for the treatment of infectious and contagious diseases, or bring patients infected with such diseases within the limits of an adjoining township. The city insisted that it conferred on it a governmental function and right which carried with it the right to use any site selected for the purpose indicated, without reference to the consent or objection of the municipality in which the same might be located. The court inclines to the former construction, holding that the city could not bring patients infected with dangerous communicable diseases within the township, without first obtaining consent therefor from its proper officers, according to law.

The court says that by the general health laws of Michigan townships have been authorized to acquire sites for hospitals in other townships, but the right has always been subject to the consent of the township where the hospital is to be located. Cities by their charters, and fourth class cities under the general law, have been given the naked right to acquire extraterritorial sites for contagious disease hospitals, for the reason that, without such legislation, such municipalities had no authority to do so. Nothing is said in any of these acts relative to the consent of the invaded township. But the construction that the authority to acquire hospital sites without their limits is an authority granted to cities and villages for the purpose of giving them a recognized benefit already enjoyed by townships generally, leaving them, as to the exercise and enjoyment of such benefits, to be governed by the general health laws in force on the subject, will comport with the well-established doctrine of local self-government of each municipality within its limits. Such construction is a reasonable one. It will preserve to each municipality the provision for the prohibition of the entrance of person, corpse, or thing infected, or suspected of infection, with any dangerous communicable disease, within any municipality, without the consent and supervision of its health officials, which has been the greatest safeguard of the public health.

There is no express indication in the Michigan legislation relative to the public health that municipal boundaries are disregarded and other or different districts established. The cities and townships within their respective limits are, in the execution of the laws relative to the public health, exercising a governmental function or agency. There is no authority of law given to one to invade the territory of any other, and there is grave doubt whether legislation which expressly granted such authority could be upheld. However, it was not necessary to determine that question in this case.

Current Medical Literature

AMERICAN.

Titles marked with an asterisk (*) are abstracted below.

New York Medical Journal.

December 5.

1 Etiology of Dementia Præcox. M. J. Karpas, New York.
2 *Peritonitis Due to Appendicitis. F. Torek, New York.
3 Cholera and Commerce. W. T. Jenkins, New York.
4 Restoration of Sight After Nearly a Month's Blindness from Glaucoma. J. L. Minor, Memphis, Tenn.
5 Value of the X-Rays in Chest Diagnosis. A. L. Gray, Richmond, Va.
6 *Congenital Nephritis. H. T. Karsner, Philadelphia.
7 Glioma of the Brain Involving the Pia Mater. I. Strauss, New York.
8 Case of Fracture and Dislocation of the Second Cervical Vertebra. C. D. Fox, Philadelphia.

2. **Appendicular Peritonitis.**—Torek discusses the various forms of appendicular peritonitis, especially diffuse suppurative peritonitis, and reviews the various methods of treatment devised. He describes in brief outline his own method (fully detailed in the *Medical Record*, Dec. 1, 1906, and abstracted in THE JOURNAL, Dec. 15, 1906, p. 2035), and explains the purpose of the large median incision, the cleansing by irrigation, and the closure without drainage.

6. **Congenital Nephritis.**—Karsner reports a case in which a child that died 45 minutes after birth showed nephritis. The mother's history and physical examination were negative, and there was no indication of syphilis. The idea (as the woman was unmarried) that some drug might have been used to induce abortion was not overlooked, but no supporting evidence could be obtained. The child was also a "blue baby," so that it is not known how far the kidney condition was responsible for its death. Karsner has found only three cases on record in which infants have truly been born with nephritis.

Medical Record, New York.

December 5.

9 *Overcoming the Predisposition to Tuberculosis and the Danger from Infection During Childhood. S. A. Knopf, New York.
10 *True Neurasthenia—Its Nature and Treatment. A. D. Rockwell, New York.
11 The Ultraviolet Ray and High-Frequency Currents in Neurasthenia. S. Tousey, New York.
12 *Care of the Mouth During Infancy and Childhood. W. J. Lederer, New York.
13 *Special Provisions for Management of Certain Forms of Mental Disorder. A. Gordon, Philadelphia.

9. Abstracted in THE JOURNAL, Nov. 7, 1908, p. 1627.

10. **Neurasthenia.**—Rockwell, while protesting against the too indiscriminate diagnosis of neurasthenia, is yet a firm believer in the propriety of classifying under this head a great family of symptoms. Their infinite variety is marvelous; but while all do not coexist, all will be found distributed among various subjects. In the majority of cases, though not in all, there is undoubtedly an hereditary tendency. When that is strong, neurasthenia may develop without any apparent exciting cause, even so early as puberty. It takes years of evil indulgence to wreck the nervous system in a strong man, so that subjects of acquired neurasthenia are usually older. The effect of alcohol and drugs is largely a question of nervous stability. Hysteria is not neurasthenia, which, indeed, is met with in women far less frequently than in men. The sexual excesses that lead to neurasthenia are rarely those

of legitimate marriage relations, but are either perverted forms, or those of irregular sexual relations. The one overmastering symptom associated with a neurasthenic state is morbid fear. The author details the various classified phobias. As to treatment, with regard to rest cure or work, intelligent differentiation is needed. Cerebral excitement associated with physical exhaustion imperatively demands rest. In the lithemic—hearty eaters who suffer from autoinfection, whose irritability and unreasonable outbursts of temper differentiate their case from the mild melancholy of the neurasthenic of an entirely different type—work and activity in plenty are oftentimes the saving grace. While success rarely depends on drugs, their judicious employment is sometimes useful. The author mentions particularly zinc bromid, alone, or with belladonna, cannabis indica, etc. Of all physical methods he regards electricity as of the most positive value in neurasthenia. The influence of light and heat have been found useful. Mental therapeutics is without doubt an important factor in many cases. Rockwell relates an instance of gynephobia in which he initiated a cure, by himself, taking the patient to a department store and compelling him to make purchases from the shopgirls.

12. **Care of the Mouth.**—Lederer discusses the development of the mouth and teeth and the importance of oral hygiene. Parents and guardians are woefully lacking in knowledge thereof, and the busy general practitioner does not realize its importance. Boards of health should cause children's mouths to be examined, and then the family physician should take up the work. He suggests the appointment of a stomatologist on every hospital staff. It is important before operation to have cleaned out not only the bowels, but also the other end of the alimentary tube.

13. **Mental Disorder.**—Gordon urges a careful discrimination of the overwhelming multitude of mental disorders with reference to the method of management. The insane asylums, as at present organized, are suitable for incurable psychic infirmities, but do not meet the material or moral requirements of recoverable maladies. It is important to avoid subjecting, for instance, patients with mild melancholia to an insane environment, and to the stigma that accompanies those who have once been in an asylum. Gordon urges the formation of a special mental disorder service in general hospitals. A patient in the hospital becoming unmanageable from delirium, etc., could be removed to this service, and when mentally fit again should be restored to his former service. These special services, moreover, could be used in the case of individuals suddenly developing a confusional state, which demanded observations. Should the case prove incurable, the patient could be transferred to an asylum. If curable, the treatment could be continued and the patient ultimately discharged well, with the thought that he had been treated in a general hospital. Special wards also would be of great educational value. The economic problem he considers solved by setting off against the expense the reduction in the enormous expense of overcrowded asylums with very little or hardly any result so far as treatment is concerned.

Lancet-Clinic, Cincinnati.

November 28.

14 *Present Status of Organotherapy. D. L. Edsall, Philadelphia.
15 *Practical Notes on Vesical Tumors. G. F. Lydston, Chicago.
16 Multiple Serositis. W. L. Bierring, Iowa City, Ia.

14. **Organotherapy.**—Edsall meets the objections to organotherapy based on a scornful charge of empiricism. The objections apply only to the lucky shot form of empiricism, the mystic form, and the form in which extensive speculation is built on a small basis of scientific fact. That form of empiricism, however, which consists in collating carefully observed facts and their apparent relation to other facts, even though it may be insusceptible of explanation, serves a good purpose in medicine, in the absence of more scientific knowledge. Edsall discusses organotherapy from this standpoint. The instability of the preparations and the fact that their natural supply by the organism is in small continuous doses while, unless we transplant organs, we are compelled to administer them only more or less occasionally, so that their effects are transitory, have to be overcome. Edsall suggests that this may be done by producing artificial substances that resemble the natural stimuli closely in their constitution and retain the desired activities, but have differences in structure that render them more stable and prolong their effects.

15. **Vesical Tumors.**—Lydston emphasizes the following points: 1, The importance of an early diagnosis; 2, the urgency of early operation; 3, the necessity of reliance to a great extent on clinical experience, rather than on the microscope for a diagnosis. In the absence of other more or less positive explanations, prolonged pyuria of vesical origin is likely to mean stone, tumor or tuberculosis. An early diagnosis is important in all of these conditions. More important still is the fact that an early diagnosis of bladder tumor, followed by immediate operation, may forestall the transition of a non-malignant into a malignant neoplasm. The dissenters from this view are chiefly laboratory men rather than clinical observers. Lydston insists on the possibility of the transition of syphilitic new growths into malignant. Under certain varieties and degrees of irritation the histology of a non-malignant neoplasm is altered by displacement and replacement of benign histologic elements by those of malignant disease. The process resembles to a certain extent that which is erroneously termed in Nature petrifaction.

Virginia Medical Semi-Monthly, Richmond.

November 27.

17 Interstitial Keratitis Due to Acquired Syphilis. J. H. Claiborne, New York.
18 Direct Inspection of the Trachea, Esophagus and Stomach. J. A. White, Richmond.
19 Coroners and Their Duties. J. W. Brodnax, Manchester, Va.
20 Diagnosis and Management of Occipito-posterior Position. J. W. Windston, Norfolk, Va.
21 *Perforating Wounds of the Uterus, Inflicted During the Course of Extrauterine Instrumentation (concluded.). A. F. Heineck, Chicago.

21. This article has been published repeatedly elsewhere.

Archives of Diagnosis, New York.

October.

22 Differential Diagnosis of Scarlet Fever, with Special Reference to the Scarlatiniform Eruptions. G. R. Pisek, New York.
23 *Diagnosis and Clinical Significance of Alimentary Albuminuria. A. C. Crofton, Chicago.
24 *Sense of Weight in the Affected Side: Its Value in the Diagnosis of Lobar Pneumonia. T. F. Reilly, New York.
25 Diagnosis of Abscess of the Liver. C. G. Cumston, Boston.
26 Intrapancreatic Segment of the Bile Duct a Significant and Practical Landmark in the Biliary Ducts. B. Robinson, Chicago.
27 How are Exophthalmus, Tachycardia and Tremor Following Extirpation of Tuberculous Glands of Neck to be Explained. C. Beck, New York.
28 Diagnosis of Some Functional Diseases. R. T. Edes, Reading, Mass.
29 Peripheral Facial Paralysis of Syphilitic Origin, the Diagnostic Importance of Its Recognition. A. Gordon, Philadelphia.
30 Syphilis of the Nervous System. S. C. Ingham, Philadelphia.
31 Differential Diagnosis of Functional from Organic Pulses: Hemiplegia, Paralysis Agitans, Occupation and Habit Cramps and Spasms. T. A. Williams, Washington, D. C.
32 Differential Diagnosis Between Extrauterine Pregnancy and Early Abortion. R. Waldo, New York.

23. **Alimentary Albuminuria.**—Croftan means by alimentary albuminuria, the passage of native food albumin as such, unchanged from the alimentary tract into the urine. He describes the method of performing the precipitating reaction therefor. The fact he emphasizes is that one should learn to recognize the existence of a distinct and well-characterized form of albuminuria of rather favorable prognosis that is not due to a nephritis of toxic or infectious origin, to circulatory disturbances in the kidneys, to general cardiorenal disease (Bright's disease in the modern sense), but is due primarily to digestive disorders of a certain type. We are dealing here with an exclusively enterogenous albuminuria in the interpretation of which the renal idea proper should be largely relegated to the background and in which treatment should not, as in Bright's disease, be directed chiefly against disturbances about the general metabolism and the cardiovascular apparatus, but against a well-characterized perversion of the gastrointestinal and hepatic functions.

24. **Diagnosis of Lobar Pneumonia.**—Reilly, struck by the great weight of hepatized lung, instituted careful questioning among patients suffering from lobar pneumonia, and found

that as soon as the sensation of acute pain due to the accompanying pleural affection has passed off, most patients state that they feel a sense of weight or load on the affected side. Reilly regards this as a valuable sign in the early diagnosis of lobar pneumonia.

United States Naval Medical Bulletin, Washington, D. C.

October.

33 *Peculiar Characteristic of Spirocheta Duttoni. C. S. Butler, U. S. Army.
34 *Investigation of Samoan Conjunctivitis. P. S. Rossiter, U. S. Navy.
35 *Composition of Potable Water. E. R. Noyes, U. S. Navy.
36 Elephantiasis of the Scrotum—Its Operative Cure. A. M. Fauntleroy, U. S. Navy.
37 Cases of Cerebrospinal Meningitis Treated with the Flexner-Jobling Serum. H. F. Hull, U. S. Navy.
38 *Four Cases of Tuberculosis (Three Pulmonary and one Pulmonary and Glandular) Treated by Mercurial Injections. R. Hayden, U. S. Navy.
39 Four Cases of Chronic Pancreatitis Treated by Drainage of the Gall Bladder. H. C. Curl, U. S. Navy.
40 Lupus of the Penis: Sucessfully Treated with Tuberculin. R. S. Langabaugh, U. S. Navy.

33. Peculiar Characteristic of Spirochetes.—Butler, in endeavoring to keep the spirochetes in African tick fever alive and active outside the body, found that there develop on the bodies of the spirochetes, with few exceptions, small nodules generally about the mid portion of the organism, but occasionally toward one end, varying in size from 1 to 3 microns, and many of them containing one or more granules which undoubtedly took the chromatin stain (Romanowski's). The nodule is organically a part of the spirochete. The author says that if these bodies really show chromatin ducts—and it certainly seems that they do—the spirochete must be a protozoan and not a bacterium. It clearly is not a spore. Microphotographs accompany the article.

34. Samoan Conjunctivitis.—Rossiter, thinking it unlikely that in a region where gonorrhea of the genitourinary tract is quite rare, the great frequency of a severe conjunctivitis should be attributable to that disorder, investigated the condition. He terms the prevalent type "Samoan conjunctivitis," describing it as "a distinct, acute infectious disease characterized by rapid onset, severe pain, photophobia, a high grade of conjunctival inflammation (soon becoming purulent), a tendency to corneal destruction over greater or less areas; and the presence in the discharge often in pure culture of its etiologic factor, a distinct micrococcus." The author holds it to be probably the *Micrococcus catarrhalis*. The various salts of silver present the best treatment.

35. Potable Water.—Noyes says that in works dealing with water examination and analysis, "figures are generally given which indicate either (a) the average analysis of a large number of waters, both pure and impure, or (b) the largest quantity of the different ingredients found in waters known to be pure; or, again, it may express (c) the quantity of a substance which a pure water might reasonably be expected to contain, or it is the largest quantity which an authority deems safe, not that the substance itself is deleterious, but because an amount in excess of that given would in all probability indicate pollution." The author compiles a table giving access to such figures by recognized authorities of equal repute and from this he makes a composite, by taking the highest figures under each heading to represent what the average potable water may contain. By this standard he tests nine waters of known character and origin, under which test such a composite standard breaks down; known polluted waters appearing as potable, and *vice versa*. He next investigates the significance of individual ingredients and their relation to pollution. In regard to the nitrogen content, he shows that albuminoid ammonia, even in large quantity, does not of itself indicate pollution, nor does its absence insure purity; that the presence of free ammonia does not prove, and its absence does not preclude pollution; that the presence of nitrites is not positive evidence of pollution, or their absence by any means proof of purity; and that the presence or absence of nitrates gives no definite information as regards purity. He further shows that the presence of chlorin can not of itself definitely determine pollution, for while small amounts are the more common, it is not difficult to find a pure water containing a very large measure of chlorids. Finally, the oxygen-consuming power alone tells us nothing; for a pure water containing vegetable matter will have a high oxygen-consuming power, while an extensively polluted one may consume but little. To suggest a means of determining the quality of water, he reviews the natural course of water from the clouds to the spring, and states that, if on analysis, we find an increase in the quantity of any one or all of the nitrogenous products over that contained in the pure water from a like source in the same neighborhood from which the specimen comes, and if the chlorin remains unchanged, then the water has suffered in quality by the addition of vegetable matter, but it is not polluted. If, however, there is an increase in the quantity of one or all of the nitrogenous products, and at the same time there is an increase in the chlorin, then animal matter has been added and the water is polluted and dangerous. As is apparent, such a method for determining purity requires a complete sanitary analysis.

38. Mercurial Injections in Tuberculosis.—Hayden reports four of the most encouraging cases of treatment of advanced tuberculosis by hypodermic mercurial injections, as recommended by Wright. In one case there were advanced tuberculous lesions of both lungs when the mercurial treatment was begun. The patient had been given up, not only by his relatives and friends, but also by the hospital staff. He was bedridden, and the attending physician expected his death within a month; yet within two months all his symptoms had disappeared, he was able to walk around by himself, although 83 years of age, and had gained 33 pounds. He is now presumably well and Hayden expects him so to continue.

Journal of Abnormal Psychology, Boston.

August-September.

41 *Sane Prototypes of Insane Mental Processes. T. H. Kellogg, New York.
42 Clinical Use of Hypnoidization in Treatment of Some Functional Psychoses. J. E. Donley, Providence, R. I.
43 *Rationalization in Everyday Life. E. Jones.
44 Experimental Study of Sleep. B. Sidis, Brookline, Mass.

41. Abstracted in THE JOURNAL, July 11, 1908, p. 163.

43. Rationalization in Every-Day Life.—From Freud's researches, Jones says, comes the demonstration that a number of mental processes in a normal person owe their origin to causes unknown to and unsuspected by the individual. The importance of feeling in the moulding of judgments, beliefs and conduct, has for centuries been recognized by poets and writers, but allotted by academic psychology a very subordinate position in regard to the intellectual processes. Not only are the causes of these mental processes frequently unsuspected by the individual, but they are repudiated and denied when the mere existence of them is suggested. The concealment mechanism may be studied in two ways: 1. The known feeling processes may be traced from their origin to the changed form in which they appear in consciousness and their effect on associated mental processes thus observed; or 2, a given mental process may be analyzed and its causes traced back to their elementary sources. While these mechanisms are numerous and complex, they may be grouped into two great classes, according to whether the individual is willing to offer an explanation as to the origin of the terminal mental process or not. Inquiry is stopped in either case, because in the one case he already has an explanation; in the other, he thinks one does not exist, and considers the given mental process self-explanatory and inquiry as to its origin absurd, unnecessary and fruitless. We may conclude that whenever an individual considers a given process too obvious to admit of investigation into its origin, and shows resistance to such an investigation, we are right in suspecting that the actual origin is concealed from him, almost certainly on account of its inacceptable nature. This criterion applies to an enormous number of our fixed beliefs—religious, ethical, political and hygienic—as well as to a great part of our daily conduct. Yet if such beliefs and conducts are to be brought into scientific harmony, it is important that the mechanism controlling them should be made the subject of precise study. In regard to the first class, where the individual proffers an

explanation, but a false one, it is only another aspect of the necessity every one feels to have what may be called a theory of life, particularly a theory of himself. No man admits that he deliberately performs irrational acts. Any act that might appear such is justified by distorting the mental processes concerned and providing a false explanation that has a plausible ring of rationality. Two different groups of false explanations occur, according as they are formed essentially for oneself, or in special reference to the opinions of one's circle. The author's purpose has been to illustrate from what diverse sides Professor Freud's principle may be supported, and to indicate the vast field over which it yet remains to be applied. We are beginning to see man not as the smooth self-acting agent he pretends to be, but as he really is, a creature only dimly conscious of the various influences that mould his thought and action, and blindly resisting with all the means at his command the forces that are making for a higher and fuller consciousness.

Yale Medical Journal, New Haven, Conn.

November.

45 Early Diagnosis of Pulmonary Tuberculosis. W. B. Bartlett, Hartford.
46 Home and the Sanatorium Treatment of Tuberculosis. D. R. Lyman, Wallingford, Conn.
47 Surgical Aspects of Tuberculosis, Especially Bone Tuberculosis. A. G. Cook, Hartford, Conn.
48 *General Pathologic Conditions Occurring with Uterine Fibroid. H. G. Anderson, Waterbury.
49 *Bier's Treatment by Hyperemia. A. M. Rowley, Hartford.
50 Gastrojejunostomy: Its Development, Conditions to which it is Applicable, and Its Results. E. W. Smith, Meriden.

48, 49. Abstracted in THE JOURNAL, July 25, 1908, p. 338.

Journal Oklahoma State Medical Association, Guthrie.

November.

51 *Railway Sanitation. J. H. Stolper, Krebs.
52 Sanitary Power as a Police Power of the State. R. L. Williams.
53 United States Public Health and Marine-Hospital Service. S. B. Warren, U. S. P. H. and M.-H. Service.
54 Ists and Isms. C. P. Brown, Chickasha, Okla.

51. **Railway Sanitation.**—Stolper reports results of an extensive and systematic study of railway sanitation. His investigations are based on a personal acquaintance with sanitary conditions of every railroad in the United States, Mexico, Canada and many countries in Europe; a personal knowledge, due to personal discussions with them of the attitude of every president and vice-president and most general managers of railways in the United States, and many years of careful study of the whole subject, in which he secured the cooperation of every railroad in the United States. He studied the following four questions:

1. What is the existing sanitary state of steam and street cars and depots?
2. What share, if any, have railways in the spread of disease?
3. Sufficiency or insufficiency of sanitary legislation?
4. Who is responsible for existing sanitary conditions on railways?

To answer these questions every railroad on the North American continent, except Alaska, was personally inspected by Stolper, in reference to (a) conditions of depots and passenger cars, dining rooms, lunch counters and dining cars; (b) facilities for cleaning and cost of cleaning equipment; (c) regulations to enforce sanitation adopted by each individual railroad company. His findings are as follows:

1. The sanitary conditions existing on steam and electric street railways and depots are bad.
2. What share, if any, railways have in the spread of disease, can be answered only problematically, for there is no definite way of collecting statistical data.
3. Specific sanitary regulations and legislation have so far been enacted in very few states. The leader of such states is Texas, followed by Wisconsin, Minnesota, Kentucky, and a few others, but while the majority of states have no specific sanitary legislation, every state board of health has the power to enforce sanitation on railways under and within the general police of the state.
4. The responsibility for the bad sanitary conditions on our railways rests primarily with the traveling public; secondarily with our public authorities, especially boards of health and police officers.

He considers the following points as of material importance in promoting sanitary conditions on American railways:

1. Abolition of the drinking cup.
2. Screening of all windows and doors of railroad cars.
3. Abolition of through car service; no passenger car should be in use longer than twelve hours.
4. Trains going through San Antonio, Texas, Arizona, New Mexico, Southern California and in the Carolinas and all other health resorts should carry Pullman cars of the Canadian Pacific type.
5. Water tanks to be made of the Chicago, Burlington & Quincy type.
6. All floors to be covered with non-absorbable paint.
7. Handling of ice for ice water with steel tongs, by a man wearing clean rubber gloves, the ice being washed by a stream of water from a hose.
8. A medical sanitary officer, especially trained in sanitation, who should be in charge of the cleaning of all railroad cars and all sanitary matters, on each railroad line, and who should report directly to the head of the operating department, preferably to the president of the road.
9. Supervision of the sources of the water and ice supply by the sanitary officers above described.
10. Abolition of the use of silk, wool or plush from railroad and Pullman cars.
11. Placing of the inner doors in cars at a different angle from the outside door, so that the cold air would not reach the sleeping passengers at night.
12. The train porter should have no other duties but to look after the physical cleanliness of the train, and should be a brakeman.
13. Adoption of a system of heating which could be regulated by passengers and not have to depend on busy train crews.
14. Also of a system of ventilation that would keep out the coal smoke and gases from the cars while in trains.
15. Every car should be disinfected with formaldehyde gas in the presence of ample moisture.
16. The toilet rooms should be enlarged, especially for women, on Pullman cars.
17. Every railroad company should operate its own sleeping cars, and the cost of sleeping car accommodations should not be above what such service would cost at hotels.

Western Medical Review, Omaha, Neb.

November.

55 *Dilatation of the Stomach. H. L. Akin, Omaha.
56 Diagnosis. W. F. Conwell, Neligh, Neb.
57 Deviations of the Septum. W. R. Hobbs, Omaha.
58 Some Difficult, Complicated Confinement Cases. J. R. Gilbert, Morrill.

55. Abstracted in THE JOURNAL, July 4, 1908, p. 66.

Therapeutic Gazette, Detroit.

November.

59 Local Use of Acetyl-Salicylic Acid (Aspirin) in Follicular Tonsillitis. G. Fetterolf, Philadelphia.
60 Cactus Grandiflorus as a Cardiac Remedy. R. G. Curtin, Philadelphia.
61 New Method of Closing the Abdominal Wound After the "Gridiron" Operation Without Using Buried Sutures, by Means of Two Crossed Sutures of Silkworm Gut. G. Torrance, Atlanta, Ga.
62 *Untoward Effects Following the Use of Maragliano's Serum. H. R. M. Landis, Philadelphia.
63 * Therapeutic Action of Mineral Waters. R. Weiss, London, England.
64 Treatment of Acute Infections by Sodium Nucleinate. D. T. Lalhé, Havana, Cuba.

62. Abstracted in THE JOURNAL, Oct. 17, 1908, p. 1360.

63. **Mineral Waters.**—Weiss discusses the physical, chemical and therapeutic properties of mineral waters. The observed fact, that carbonic acid gas escapes far more slowly from the water of natural acidulous springs than from artificial waters, is supposed to be due to the presence in natural waters of bodies capable of hypersaturating themselves with carbon dioxid, called "catalisatories." Possessing no intrinsic chemical properties themselves, they are capable of materially assisting extrinsic chemical reactions occurring in the same solution. One 360,000th of a milligram of platinum will promote decomposition of 1 c.c. of hydrogen peroxid. These energies are comparable to those of the enzymes in plant life, the elucidation of which has been greatly promoted of late by a comparison of synthetic with natural processes. Excellent results have been obtained with simple means. Weiss urges the submission of these catalisatories to careful and accurate investigation.

Denver Medical Times and Utah Medical Journal.

November.

65 Nose, Throat and Ear Complications of Infectious Diseases. T. E. Carmody, Denver.
66 Eyestrain. E. W. Fox, Trinidad, Colo.
67 *What Schedule of Documentary Evidence Should be Accepted as Evidence of Qualification to Practice Medicine? S. D. Van Meter, Denver.
68 Tuberculous Faucial Tonsil. G. R. Sweeny, Pittsburg, Pa.
69 *Some Industrial Evils. C. G. West, Salina, Utah.
70 *Dementia Præcox. R. L. Gillespie, Portland, Ore.

67. Abstracted in THE JOURNAL, June 20, 1908, p. 2098.

69. **Industrial Evils.**—West discusses, from a socialistic viewpoint, the evils incidental to the evolution of society, with particular reference to the physical well-being of the people.

70. Dementia Præcox.—Gillespie pleads for a uniform nomenclature in mental diseases. Dementia præcox, if used as a class or type name, is expressive in so far as it designates a deterioration process; but the term should be carefully restricted to those cases in which mental deterioration at an early stage of the disease is clearly recognizable and should be carefully considered and possibly avoided in cases in which a dementia may possibly be developed.

Pennsylvania Medical Journal, Athens.

November.

71 *Nature of Carcinoma in General and the Early Diagnosis of Gastric Carcinoma. J. M. Anders, Philadelphia.
72 Reflex Neuroses Arising from Ocular and Nasal Abnormalities. S. L. Ziegler, Philadelphia.
73 *Surgical Treatment of Gastroptosis. E. Laplace, Philadelphia.
74 *Prevention, by Operation and Other Methods, of Retroversions of the Uterus After Childbirth. E. P. Davis, Philadelphia.
75 Fistula-in-Ano. W. M. Beach, Pittsburg.
76 Operative Treatment of Internal Hemorrhoids: Including After-Treatment as well as the Sequelæ which Occasionally Ensue. L. H. Adler, Philadelphia.
77 Case of Uterine Adenoma Malignum with Vaginal Implantation, Eleven Years after Operation. G. E. Shoemaker, Philadelphia.
78 *Nasal Respiration: Its Relation to General Disease. G. R. S. Corson, Pottsville.
79 *Medical Journals and Publication of Society Papers. O. H. Allis, Philadelphia.
80 A Few of Dickens' Doctors and Things Medical. T. R. Currie, Philadelphia.
81 Case of Hydrophobia. G. A. Stock, Danville.
82 Massachusetts State Hospital for Inebriates and Dipsomaniacs. R. A. Woods, Boston.

71. Abstracted in THE JOURNAL, Oct. 31, 1908, p. 1451.

73. Gastroptosis.—Laplace says that the nutrition of tissue forms the basis of physiologic equilibrium, the disturbance of which results in altered tissue resistance. Perfect nutrition maintains the ligaments in proper tonicity, while imperfect nutrition weakens them and allows the weight to be sustained by them to stretch them beyond endurance. Beyea's operation of shortening the ligaments by free rows of interrupted sutures is a good one in immediate results, but its later effects are bad; so Laplace endeavored to improve on the method by supporting the stomach in a normal position from above and below. He devised as an adjunct to Beyea's operation a method of suturing the gastrocolic omentum to the anterior abdominal wall by a continuous catgut suture, after gently scarifying the surfaces to be brought into apposition. The stomach is thus supported from below.

74. Prevention of Retroversion of the Uterus After Childbirth.—Davis says that congenital retroversions and those arising from lack of developments are difficult to correct after childbirth. It is important that labor be so conducted that overdistention of the ligaments and fascia, which maintain the uterus in its accustomed position, shall be avoided. Deep lacerations of the cervix and vagina extending into the fascia should be repaired immediately. Lacerations near the utero-sacral ligaments are especially important. During the first forty-eight hours after labor the uterus should be maintained in position by gauze packing. During the puerperal period the patient should change her posture frequently, avoiding lying long on the back. Patients should not get up too early after childbirth. After the lochial discharge has ceased, the knee-chest posture, night and morning, will greatly aid in restoring the uterus to its proper position. When there is a disposition to retroversion the patient should wear a pessary as soon as she begins to get up. Such patients should be kept under observation for several months at least. When the uterus does not assume its normal position and maintain it, intraperitoneal shortening of the round ligament by Gilliam's method should be performed.

78. Abstracted in THE JOURNAL, Oct. 24, 1908, p. 1456.

79. Abstracted in THE JOURNAL, Oct. 17, 1908, p. 1357.

Kentucky Medical Journal, Bowling Green.

November.

83 *Preparation for a Normal Labor. S. L. Beard, Shelbyville.
84 Preparation of Patient for Normal Labor. J. M. Peck, Arlington.
85 Antepartum and postpartum Hemorrhage. E. Alcorn, Hustonville.
86 *Puerperal Eclampsia. J. M. Peck, Arlington.
87 *Management of Occipito-Posterior Positions. H. B. Ritter, Louisville.
88 *Hysteria. M. Board, Louisville.
89 *Multiple Neuritis. G. P. Sprague, Lexington.
90 *Occupational Neuroses. J. J. Moren, Louisville.
91 *Diet and Hygiene of Children from 2 to 6 Years of Age. P. H. Barbour, Louisville.
92 *Comparative Dosage in Children. A. O. Sisk, Earlington.
93 *General Symptomatology of Diseases in Childhood. R. B. Gilbert, Louisville.
94 *Relation of Rachitis and Osteomalacia. C. B. Creech, Middlesburg.
95 *High Arterial Tension. H. H. Roberts, Lexington.
96 *Dilatation of the Heart. C. G. Daugherty, Paris.
97 *Angina Pectoris and Pseudoangina. W. F. Boggess, Louisville.
98 Summer Complaint. I. T. Townes, Madisonville.
99 Opsonic Therapy. H. J. Farbach, Louisville.
100 Peculiarities of the Anatomy of Infants. R. B. Gilbert.

83, 86, 87. Abstracted in THE JOURNAL, Oct. 17, 1908, p. 1353.

88, 89, 90, 91, 92, 93, 94. Abstracted in THE JOURNAL, Oct. 24, 1908, pp. 1453, 1454.

95, 96, 97. Abstracted in THE JOURNAL, October 31, p. 1544.

FOREIGN.

Titles marked with an asterisk (*) are abstracted below. Clinical lectures, single case reports and trials of new drugs and artificial foods are omitted unless of exceptional general interest.

Lancet, London.

November 21.

1 *Pathology and Treatment of Diabetes Mellitus, Viewed by the Light of Present-Day Knowledge. F. W. Pavy.
2 *Heredity in Diseases of the Nervous System. Sir W. R. Gowers.
3 *Heredity in Cancer. E. F. Bashford.
4 Influence of Heredity on Tuberculosis. A. Latham.
5 Vicious Circles Associated with Disorders of the Digestive System. J. B. Hurry.
6 Multiple Vesical Calculi. W. J. Maloney.
7 Diagnosis and Treatment of Pancreatitis. D. C. Watson.

1. Diabetes.—Pavy reviews the growth of the evolution of our knowledge of diabetes, and concludes that everything points to the existence of a missing link in the chain of events thus far reckoned to occur in connection with the passage of carbohydrate from the seat of absorption in the walls of the alimentary canal to that of utilization in the tissues.

2. Heredity in Nervous Diseases.—Gowers holds that the scientific study of heredity can not be applied fully to the diseases of man, for the human race is not open to Mendel's essential methods, and its mere complexity of development involves innumerable differences from lower forms of life, the effects of which may be greater than we can realize. In diseases that are merely in, not of, the nervous system—tumors, defective developments, etc.—though heredity may be held likely, it can not be directly connected with them. Sudden cerebral seizures, etc., depend on causes that take their heredity far from the brain in which the lesion occurs, yet the frequency with which heredity is active is notable. A class of diseases in which heredity is potent is those which consist of deranged chemical processes in the vital laboratory of the human frame giving rise to endogenous toxins, e. g., diabetes. Diseases of the nervous system in which the influence of heredity is marked seem to fall in certain classes. 1. The early "abiotrophies," a term applied by Gowers to cases in which certain systems of structure in the nervous or muscular system have an essential defect of vital endurance in consequence of which life slowly fails. He instances baldness, hereditary ataxia, pseudohypertrophic paralysis, hereditary nerve atrophy, etc., and cites illustrative cases. In this class the heredity is maternal only. The tendency is thus germinal. The female children seldom suffer in the typical form, but they inherit the tendency and their sons are prone to suffer. In the ova from which the daughters develop, the potentiality of the disease is only in that portion of the protoplasm which will become the germinal tissue for another generation. Gowers says that if the tendency is thus fixed in the germ tissue, and differently fixed, according to resulting sex, does not the fact make it probable that the sex is also predetermined? 2. This class may include hereditary maladies, which begin later in life after the period of growth is over. They present persistent disturbance of function and are commonly hereditary, but from either side. As instances, are mentioned heredo-ataxia of Marie, Huntington's chorea and Thomsen's disease. 3. Heredity is operative in many functional affections, e. g., hysteria and neurasthenia, also in epilepsy and insanity. He excludes from consideration epilepsies

that result solely from organic lesions of the brain, from disease, or trauma, or difficult birth, as not concerned with heredity. He has always acted on the belief that the tendency to convulsion in such acquired cases is not transmissible, and he has never hesitated to permit the marriage of a sufferer and has never had any evidence that he was wrong in doing so. He points out the effects of ignorance and the fact that a supposed stigma often leads to concealment, to show the difficulties of ascertaining the facts of family histories. He discusses the statistics of 2,400 cases of epilepsy in which heredity was ascertained in 39 per cent. of 1,993 males and 43 per cent. of 1,207 females.

3. **Heredity in Cancer.**—Bashford prefaces his consideration by pointing out that in recent years a great deal of new evidence has been accumulated in support of the view that a malignant new growth contains nothing foreign to the organism attacked. He instances two classes of new facts. 1. Carcinoma and sarcoma can be grown continuously only in other individuals of the same species of animals. 2. Investigations into questions of metabolism have shown that the relations of a malignant new growth to its host are merely those of nutrition—of the demand for and the supply of the normal foodstuffs from which tissue is built up and analogous to those obtaining between fetus and mother. He discusses reports rendered to the Imperial Cancer Research Fund during 1906 and 1907 on 2,932 patients suffering from malignant new growths, in which the clinical diagnosis was confirmed by microscopic examination; and concludes that "with nothing but negative evidence of the part played by inherited constitutional conditions before us, and with positive evidence of the important part acquired constitutional conditions can play in furthering the growth, perhaps the development, of cancer, we shall more profitably spend our time if we frankly seek to ascertain how they are acquired, than if we continue to preach the doctrine that they are inherited and that it is hopeless to contend against them."

British Medical Journal, London.

November 21.

8 Induced Hyperemia as a Means of Treatment. Sir. W. Bennett.
9 *Early Diagnosis of Organic Disease of the Nervous System. T. R. Bradshaw.
10 *Recent Theories and Experiments on Heredity and Inheritance. H. Drinkwater.
11 *Heredity in Diseases of the Nervous System. Sir W. Gowers.
12 Two Cases of Uterine Fibroids Showing Peritheliomatous Changes: Long Immunity from Recurrence After Operation. A. H. G. Doran and C. Lockyear.
13 Solid Fibroid of Ovary Obstructing Delivery. J. Stewart.
14 Abdominal Hysterectomy for Cancer of the Cervix and Its Immediate Mortality. T. B. Henderson.
15 Account of an Epidemic of Enteritis Caused by the "Liverpool Virus" Rat Poison. L. Handson, H. Williams and E. Klein.
16 *Specific Skin Eruption in Pneumonia. F. M. Pope.
17 *Pelvic Pathology and Sea Sickness. G. V. Elder.
18 New Method of Administrating Nitrous Oxid for Prolonging Anesthesia in Dental Operations. F. Trewby and A. Dinnis.

9. **Organic Nervous Disease.**—Bradshaw considers the various aids to the diagnosis of organic nervous disease. As to knee-jerk, the real problem in his experience lies in making sure of its absence and not in the interpretation of it. Briskness of knee-jerks, as an isolated phenomenon, is rarely of serious moment. Ankle clonus, if sustained, always means organic disease, and may be the only positive indication of it. Absence of the knee-jerk, being never due to hysteria or other functional disease, must always be looked on with grave suspicion. Bradshaw believes that if the knee-jerks can be obtained we may assure the patient with great confidence that he has not locomotor ataxia. Of ocular signs, inequality of the pupils may be normal to the individual. It may also, he thinks, be a manifestation of uremia. In estimating diplopia, we must remember that there is a so-called rheumatic neuritis of the sixth nerve which will be recovered from. Nystagmus suggests organic disease and may indicate disseminated sclerosis in apparently mere hysteria. He regards as true nystagmus only rhythmical and continuous movements elicited without excessive forced deviation of the eyes. It is seldom safe to diagnose locomotor ataxia or general paralysis in the absence of the Argyll-Robertson pupil, but this must not be given undue weight; Bradshaw has recently had two patients with this condition without any other indications of organic nervous disease. He further considers bladder troubles, which are so common in individuals with nervous disease, persistent frequency of the pulse in locomotor ataxia, and the so-called visceral crises of tabes.

10. **Heredity.**—Drinkwater briefly reviews the theories of heredity and summarizes Mendel's theory. With regard to the inheritance of acquired characters, he holds that the subject is not absolutely settled, but that the most definite facts and precise experimental investigations favor the contrary views of Weismann. Mendel's work is absolutely in favor of Weismann. He discusses DeVries' views of variation, and submits that the various facts that he has mentioned point out with unmistakable clearness the only way by which hereditary disease can be eliminated. We hear about physical deterioration, and great benefit is expected from education and improved sanitary conditions; but neither education nor sanitary laws can eradicate hereditary disease, except by preventing the marriage of affected individuals. Just as a purely brachydactylous race might be produced, so it would be equally easy to eradicate this abnormality by preventing the marriage of the abnormal individuals, and there is little doubt that other hereditary defects and diseases can be practically made to disappear by the same means. Unfortunately, modern legislation tends to the opposite effect, for everything is done to encourage not only the marriage, but the early marriage, of inferior members of the community, while the burdens of taxation retard more and more the marriage of the middle classes. Free education, free meals, free clothing, are all very well for a certain class, but they are not remedies, and the net result to the nation in the long run will be detrimental.

11. See Abstract No. 2.

16. **Specific Eruption in Pneumonia.**—Pope records a case of pneumonia in which a crop of papules was observed on the upper part of the back. They were deep rose color, circular, from three to four millimeters in diameter, darker than the average typhoid spot, and disappeared completely on pressure. In three days the first crop faded and a second crop appeared. In another three days they became pustular. Examination of pus showed pneumococci only. The resemblance to smallpox is commented on, though no vesicular stage was noted.

17. **Seasickness.**—Elder reports a case to emphasize the importance of not overlooking extraneous causes, especially unsuspected pelvic conditions in women, in dealing with seasickness.

Medical Press and Circular, London.

November 18.

19 Influence of Diathesis on the Causation and Treatment of Diseases of the Eye. A. M. Ramsay.
20 Latent Persistence and the Reactivation of Pathogenic Bacteria in the Body. L. S. Dudgeon.
21 Chronic Colitis. G. R. Mill.

Clinical Journal, London.

November 18.

22 Case of Ankylostomiasis. Sir D. Duckworth.
23 Employers' Liability for Injury or Illness. F. M. Sandwith.
24 Procidentia Uteri. E. S. Bishop.

Journal of Hygiene, London.

September.

25 *Experiments on Influence of Fatness on Susceptibility to Caisson Disease. A. E. Boycott and G. C. C. Damant.
26 *Abnormal Reactions to Horse Serum in the Serum Treatment of Cerebrospinal Fever. J. R. Currie.
27 *Cause of Lead Poisoning in the Tinning of Metals. G. E. Duckering.
28 *Drinking Water on Steamships. M. A. Ruffer and J. G. Willimore.
29 Experiments on Immunity Against Vaccinia in Animals. A. B. Green.
30 Influence of Temperature and Other Physical Conditions on Calf Vaccine. A. B. Green.
31 Variation of the Rate of Disinfection with Change in the Concentration of the Disinfectant. H. E. Watson.
32 Bacteriologic Observations on Colon Bacilli Infecting the Urinary Tract, Especially Colon Bacilli of the Anaërogenes Class. W. J. Wilson.

25. **Fatness and Caisson Disease.**—Boycott and Damant record elaborate experimental studies by which they are led to conclude that fatness increases the susceptibility to death from

Caisson disease. The practical conclusions are clear. Really fat men should never be allowed to work in compressed air, and plump men should be excluded from high pressure caissons (e. g., over + 25 pounds), or in diving more than about 10 fathoms, and at this depth the time of their exposure should be curtailed. If deep diving is to be undertaken, or caissons worked at pressure approximating to + 45 pounds, thin men should be selected. It is unfortunate that an increase of experience and skill in technical operations should so often be associated with the increase in waist measurement which accompanies the onset of middle life. Middle-aged men have a lower rate of respiratory exchange than young men; if fatness is not the explanation of this, they are at a double disadvantage, and the two factors must be multiplied, rather than added, together.

26. **Abnormal Reaction to Horse Serum.**—On the basis of 50 cases of cerebrospinal fever treated with four different curative sera, all derived from the horse, Currie finds that:

The total volume of serum given did not affect the frequency of abnormal reactions.
The total number of injections of serum, in certain cases, may have been a factor in inducing abnormal reactions.
The interval of time between the injections concerned was the primary influence in determining abnormal reactions.
It was not apparent that a preceding normal reaction predisposed to a subsequent abnormal reaction.
It was not apparent that a large administration of serum within the latent period predisposed to a subsequent abnormal reaction.

27. **Lead Poisoning.**—Duckering, an inspector of factories, summarizes the investigation of Miss Anderson and Dr. Legg into the conditions of labor in the coating of metal articles with lead or tin. The process is described, and the trades affected are enumerated, statistics of lead poisoning being appended. It is found that inhalation is the principal source of trouble and that long-continued absorption of small quantities of lead is a much more important factor than the amount of the dose in causing lead poisoning. The vapor of lead chlorid is continually given up from the tinned article for some time after its removal from the bath.

28. **Drinking Water and Steamships.**—Ruffer and Willmore give a short account of: 1, The laws concerning the supply of drinking water to ships in some of the chief civilized countries of the world; 2, the result of bacteriologic examination of the water on 62 steamships; 3, the chief deficiences in supply and storage which have come under their notice; and 4, the reforms which they consider urgently necessary. They make the following recommendations:

1. Ships should be allowed to take water only in places licensed by the medical officer of the port.
2. The hoses, pumps, water boats, etc., should be the property of the port sanitary authorities, who would then be responsible for the proper storing and cleaning of such apparatus. Should this be impossible, no apparatus or water tank should be used until it has been examined and declared satisfactory by the said authority. All the apparatus should be examined and tested once a month.
3. Intake pipes flush with the deck should be absolutely prohibited. They should be replaced by upright iron pipes, three feet high, of standard gauge, having their free ends bent downward and fitted with screw cap chained to the pipe. When in use the cap should be removed and the hose screwed on. Some simple device would indicate when the tank was full.
4. All water tanks on board ships should be made of iron, and coated inside with cement.
5. All water tanks should be placed so as to allow inspection at any time during the voyage.
6. All water tanks should be so closed as to avoid all chances of contamination during the voyage.
7. All water tanks should be fitted with ventilating pipes which should be carried up to a sufficient height to prevent contamination.
8. One or more taps should be placed through the floor of tanks to insure the latter being completely emptied at regular intervals. The tanks should be constructed with "round corners;" the floor of the tanks should be sloping toward the taps used for emptying the tanks.
9. The tanks should be completely emptied and disinfected after each voyage. The methods used at present for this purpose are extremely unsatisfactory. Some form of gaseous disinfection would probably give the best results.
10. In order to insure these rules being carried out, an international agreement is necessary.

Indian Medical Gazette, Calcutta.

October.

33 *Treatment of Immature Cataract. H. Smith.
34 Pyorrhœa Alveolaris: from a Tropical Standpoint. C. F. Badcock.
35 Spirochætosis in Southern Arabia and the Morphology of the Parasite. R. M. Carter.
36 *Value of Taking the Specific Gravity of the Blood During Saline Transfusion in Cholera. E. J. O'Meara.
37 Treatment of Uncomplicated Lobar Pneumonia. G. M. Smith.
38 *Treatment of Smallpox by Large Doses of Hydrargyrum Cum Creta. V. B. Nesfield.

33. **Immature Cataract.**—From a consideration of his experience in 20,000 cataract extractions, Smith considers:

1. Extraction of immature cataract by the capsulotomy method is hardly justifiable.
2. Ripening procedures are either unsatisfactory or dangerous.
3. To wait for Nature's maturing process is highly unsatisfactory and detrimental to the patient.

His treatment of immature cataract, which he regards as the procedure of the future, and which will make mature senile cataract a much rarer condition than it is at present, is extraction of the lens in its capsule. He describes the method he follows.

36. **Saline Transfusion in Cholera.**—O'Meara urges that more accurate and better results can be obtained during intravenous injection of salt solution in cholera by examination of the specific gravity of the blood, rather than by observation on the blood pressure, for the following reasons:

1. The whole treatment of the disease turns on the increased specific gravity of the blood.
2. An enormous quantity of saline solution may be transferred into the vessels without any marked rise of blood pressure.
3. The peripheral resistance is much increased in cholera, not only by changes in the endothelium of the vessels, but by chemical changes in the blood diminution of oxygen, etc., even independently of the increased specific gravity.
4. The blood pressure in cholera is liable to sudden and considerable variations apart from transfusion, which he is unable to explain.
5. The blood in cholera being deficient both in water and salts, transfusion may temporarily raise the blood pressure with fluid without increasing the specific gravity with salts.
6. By transfusion, gradually regulated by taking the specific gravity, the renal epithelium has a much better chance of recovering its function, and therefore the present large mortality from uræmia will be considerably reduced, if not abolished. The most rapid and convenient method for ascertaining the specific gravity of the blood in cholera is that of Hammerschlag, which he describes.

38. **Smallpox.**—The striking resemblance between acute secondary syphilis, as witnessed in India, and smallpox, led Nesfield to employ mercury in the latter disease. He draws the following conclusions from his experience:

1. Ten grains of hydrargyrum cum creta, three times a day by mouth, continued for six days, produces no symptoms of poisoning in smallpox (with natives).

2. The drug appears to have a marked action in modifying and reducing the severity of the disease.

Intercolonial Medical Journal of Australasia, Melbourne.

October.

39 Surgical Tuberculosis. R. Poulton.
40 *Abscess Between the Iliopsoas Muscle and the Head of the Femur. R. H. Russell.
41 Treatment of Urethral Stricture. A. Morris.

40. **Iliopsoas Abscess.**—Russell says that the difficulty and obscurity that frequently besets the diagnosis of hip-joint disease is due to the fact that that term covers a group of affections. He describes a syndrome which, in his experience, invariably has been associated with a tuberculous focus in the head of the bone that has opened into and infected the bursa lying beneath the iliopsoas muscle. The position assumed by the affected limb when the child is laid on its back is one of flexion combined with abduction and eversion; in addition, the patient invariably grasps the thigh firmly with the hand of the same side. Russell has never yet been mistaken in diagnosing suppuration of the bursa beneath the iliopsoas on sight in this condition. The explanation is that the iliopsoas is relaxed by the position of flexion, eversion and abduction, but the tendency of the limb to fall outward will have a contrary effect; the patient therefore grasps the thigh to support it and to counteract the tendency produced by gravity.

Annales de Médecine et Chirurgie Infantiles, Paris.

November 1, XII, No. 21, pp. 721-756.

44 *Functional Kidney Tests in Children. (Elimination rénale provoquée chez l'enfant.) E. Gaujoux.
45 *Nasopharyngeal Origin of Chorea. L. de Ponthière.

44. **Functional Tests of the Kidneys in Children.**—Gaujoux has applied the methylene blue test of kidney functioning in six healthy children between 10 and 14, in eight with recent acute nephritis, and in two with intermittent albuminuria. He used a solution of 1 gm. of the stain in 20 gm. of water, injecting 1 c.c. of the solution in the side of the thigh. The

findings are tabulated and the harmlessness of the test reiterated. It is especially useful to determine whether a nephritis has completely subsided or there still is latent trouble, after the albumin has disappeared from the urine.

45. **Nasopharyngeal Origin of Chorea.**—Ponthière found that a severe chorea in a girl of 9 subsided at once after treatment of inflamed tonsils and adenoids. This occurred twelve years ago, and since then he has frequently found indications for local treatment of the throat in cases of chorea, and invariably the effect was most striking in the prompt subsidence of the chorea. The nasopharynx is the source for infection of various kinds, especially for the rheumatism infection and for chorea. Enlarged tonsils and adenoids do not always become infected, and the infection may be of varying virulence and the soil of varying receptiveness, but the influence on the chorea of suitable treatment of the throat and nose will convince the most skeptical, he says, of the unmistakable connection between them.

Archives Générales de Chirurgie, Paris.

October, II, No. 10, pp. 335-444.

46 *Treatment of Operative Pneumothorax in Sound Pleura. C. Liné.
47 Hemorrhoids in Children. (Les hémorroïdes chez l'enfant.) D. G. Zesas.
48 Stenosis of Intestine Secondary to Strangulated Hernia. Mauclaire and Levant.

46. **Treatment of Operative Pneumothorax.**—The experiences on record teach that the danger is not so much from the pneumothorax itself as from the possibility of infection. The pneumothorax rarely proves immediately fatal; there is an interval of from a few days to three weeks before the patient succumbs, and death is then the result of infection. The pleura reacts to irritation with an effusion, the peritoneum by the formation of adhesions, favored by the frequent points of contact between the intestines and the peritoneum. In pneumothorax the lung collapses and one sheet of the pleura retracts with it, leaving a space wider than usual between the two layers, with no points of contact to favor production of adhesions. Every effort should be made, therefore, to avoid infection, and to ward off trouble from this source. Liné gives the details of 25 cases, including several hitherto unreported, all showing that even a total pneumothorax causes no serious disturbances if it occurs slowly and gradually, and if the other lung is working well. He thinks that there is no need for apparatus to induce intrapulmonary positive pressure, as the operation can be done without any such aid, relying on tamponing the pleura during the course of the intervention, artificial respiration as needed, and "harpooning" if alarming symptoms develop. If infection occurs and the temperature rises ever so slightly, no time should be wasted in conjectures, but the pleura should be drained at once by resection of a rib and possibly rinsed out. There was only one fatality in the 25 cases reported, and the pneumothorax was not responsible for this. Bardesco left the pleural cavity open while removing a sarcoma of the ribs, but the dyspnea and suffocation were slight at the time and later, and all signs of the pneumothorax had disappeared in twenty-five days. Delagenière purposely induced a pneumothorax to arrest the hemorrhage in the lung after a bullet wound in the apex, bleeding freely into the air passages. He allowed the air to enter the pleural cavity very gradually and none of the symptoms was aggravated. The expectoration of blood decreased and the pulse became stronger. The hemorrhage was definitely arrested and the patient soon recovered.

Presse Médicale, Paris.

November 14, XVI, No. 92, pp. 729-744.

49 Ferments of the Digestive Canal. Roger.
50 Yellow Fever. (La fièvre jaune.) E. Brumpt.

November 18, No. 93, pp. 745-752.

51 *Digestive Disturbances in Rachitis. (Troubles digestifs dans le rachitisme.) A. B. Marfan.

51. **Digestive Disturbances in Rachitis.**—Marfan has studied for several years the digestive conditions in children with rachitis and in those who develop it later, both in private and hospital practice. The prodromal or initial disturbances are a recurring catarrhal gastroenteritis or a spasmodic dyspepsia with repeated vomiting. The form observed in confirmed rachitis is a dyspepsia from atony with distended, flabby abdomen. Bottle feeding alone is unable to induce rachitis; it is merely a predisposing factor. The real causes of rachitis are chronic infections or intoxications—in the widest sense—occurring at a certain phase of ossification and blood production. This phase extends from the last months of intrauterine existence to the end of the second year. It is during this time that the modifications of the bone marrow resulting from these infections or intoxications interfere with the normal formation and growth of the bone tissue. In studying the antecedents of a rachitic child it is only exceptionally that some infection or chronic intoxication is not discovered during this period. The most common are chronic or recurring digestive toxi-infections, prolonged or recurring bronchopneumonia, multiple and recurring subcutaneous abscesses or prolonged suppuration of eczematous surfaces, and inherited syphilis. These factors act most powerfully on a predisposed soil, and bottle feeding, especially when it has been used from birth, and heredity, are the most effectual of the predisposing agents. Subordinate to these are the factors of dampness in the home and deprivation of air and light.

Revue de Chirurgie, Paris.

November, XXVIII, No. 11, pp. 551-672.

52 Transactions of the Twenty-first French Surgical Congress.

Semaine Médicale, Paris.

November 18, XXVIII, No. 47, pp. 553-564.

53 *Treatment of Chorea by Intraspinal Injections of Magnesium Sulphate. (Traitement de la chorée de Sydenham par les injections intra-arachnoïdiennes de sulfate de magnésie.) G. Marinesco.

53. **Treatment of Chorea by Intraspinal Injections of Magnesium Sulphate.**—Marinesco reports four cases of severe chorea in which the duration of the affection was shortened and there has been no recurrence since the treatment, which was by intraspinal injection of 3.5 c.c. of a 25 per cent. solution of magnesium sulphate. The patients were girls between 12 and 22 years old, and the sedative action of the drug was apparent in a few hours, the symptoms subsiding completely in some, but requiring a second injection in the others. Slight by-effects were noted, but they were transient in all, and in the forty cases on record in which the magnesium sulphate has been administered in intraspinal injections apnea was observed only in one case, and it was brief and transient. The tendency to headache and pain in the limbs after the injection can be reduced by a preliminary injection of morphin. In future he intends to use an isotonic solution, that is, one with a freezing point at 0.56 below zero C. He thinks that this treatment may be found effectual also in major chorea and in the chorea of pregnant women.

Archiv für Gynaekologie, Berlin.

LXXXVI, No. 3, pp. 505-794. Last indexed Nov. 7, p. 1647.

54 *Relations between Age at First Menstruation and Development of the Pelvis. Conditions in Italy. (Alter der ersten Menstruation in Italien.) T. R. Doria.
55 Structure of the Decidua. (Zur Frage von dem feinsten Bau des Deciduagewebes, seiner Histogenese, Bedeutung und dem Orte seiner Entwickelung im Genitalapparat der Frau.) K. Ulesko-Stroganoff.
56 Chemical Study of the Secretion of the Gravid Vagina. (Der Scheideninhalt Schwangerer.) P. Zweifel.
57 *Capacity for Absorption of the Mucosa of the Vagina and Uterus. (Resorptionsfähigkeit der Schleimhaut der Vagina und des Uterus.) S. Hlawacek.
58 *Anatomy, Pathology and Therapy of Chronic Endometritis. A. Theilhaber and A. Meier.
59 *Treatment of Placenta Prævia. M. Henkel.
60 Experimental Research on Mixed Infection with Vaginal Secretion and Lochia. (Was ergeben die bei Thieren angestellten Mischinfectionsversuche mit Scheiden- und Lochialsecret?) E. Konrad.
61 Duration of Gestation. (Wann tritt die Geburt ein? Die zufällig veränderte Dauer der Schwangerschaft.) F. Schatz.

54. **Influence of Ovaries on Development of Pelvis.**—Doria states that the average age at the first menstruation was 14 years and 3 months in 36,000 Italian women. There seems to be a connection between the time of the first menstruation and the size and shape of the pelvis, a very early or very late onset of the menses having been found almost constantly in his 3,000 cases of malformation of the pelvis. He believes that the facts observed confirm the assumption that the ovaries have an influence on the development of the skeleton and the nourishment of the bones, especially of the pelvis.

This influence is unusually active during or just preceding puberty, and consequently measures to insure rest and ample nourishment during this period, with appropriate ovarian treatment, will reduce the number of generally contracted pelves, while the degree of malformation from infantile rachitis will be reduced to the minimum.

57. **Absorbing Capacity of Vaginal and Uterine Mucosa.**—Higuchi found that the mucosa of the vagina was able to absorb potassium iodid, salicylic acid and strychnin either in a water, glycerin or cocoa butter vehicle. The latter seemed to facilitate absorption most.

58. **Chronic Endometritis.**—Theilhaber became convinced five years ago from microscopic study of 120 uteri that the structure of the normal mucosa varies widely in different individuals even of the same age, and also in the same person at different ages. Conditions are different also in the periods preceding and following menstruation. He has since been conducting experimental, anatomic and clinical research on the subject, and asserts that treatment should be based on this fact. Hypersecretion requires removal of the cause, iron for chlorosis, climatic, hydrotherapeutic, psychic and dietetic measures for neurasthenia, hysteria, etc. Cool sitz baths are useful in case of flabby uterus, with or without ergot, and he also advises flushing the vagina with very hot fluids to stimulate the uterine muscle to contract. He found cauterization of the interior of the uterus beneficial in some cases, applying a 30 per cent. solution of zinc chlorid or formalin on a cotton swab. Rinsing out the uterus does not seem to do much good in case of hypersecretion. Local bloodletting is useful in case of hypersecretion from venous congestion. By scarification of the vaginal portion, it is possible to withdraw several spoonfuls of blood several times a week. Recurrence may be observed following sexual excesses or emotions—the latter as a factor in recurrences is not sufficiently heeded by physicians, as a rule, he says. Vasomotor influencing of the vascular system of the uterus is responsible for the return of the hypersecretion in these cases. He advises expectant treatment during the acute phase of gonorrheal endometritis. In the chronic phase energetic measures are necessary. Gonorrhea of the urethra seems to heal better on account of the constant flushing out with the urine, and the menstrual blood seems also to promote the healing of the uterine gonorrhea. In the intervals between the menses pus stagnates in the uterus, as the bend at the internal os interferes with the escape of the tenacious secretion. The conditions are similar to those in an abscess in which there is not free outlet for the pus. By rinsing out the uterus, large amounts of retained secretion are washed out, which otherwise prevent the healing of the process. He treats such patients by periodical slight dilatation, using for the purpose a Schultze dilator every few days, and then rinsing out the uterus with a weak solution of some silver salt, or ichthyol in case the trouble is of long duration.

59. **Treatment of Placenta Prævia.**—Henkel comments on Füth's statistics of 618 cases of placenta prævia at Koblenz with a mortality of 143, that is, 19.7 per cent. Death was the result of hemorrhage in 98 cases and of puerperal infection in 31. Henkel declares that every patient with placenta prævia should be taken to some institution at once. The general practitioner must tampon in case the cervical canal is not dilated, and he should not rely on "aseptic cotton," which is too often the source for infection, but should tampon with strips of gauze, preferably impregnated with a 2 per cent. solution of alum, but wrung out as dry as possible. The vulva should be shaved first and the parts around disinfected. The vagina is then rinsed out with some disinfecting fluid and then packed tight with the broad strips of gauze. The bladder must be emptied before tamponing. A patient thus tamponed, with a T bandage to hold all in place, can be safely taken to the nearest lying-in hospital. This treatment is applicable, however, only in case the amniotic sac is still intact and the cervix undilated. In case the membranes are ruptured, he advocates version when the cervix is dilated enough to admit one finger. He discusses the various points of this one-finger technic, remarking that skilful version and cautious management of the delivery are bound to give better results than have hitherto been realized. In case vaginal Cesarean section is contemplated, he gives ergot at once so that its effect will be obtained simultaneously with the evacuation of the uterus. He adds that the classical Cesarean section is seldom advisable for placenta prævia. After the uterus is empty, if the hemorrhage still continues, he seizes the vaginal portion of the cervix with forceps and pulls the uterus down, forward and toward the right and then to the left. This manipulation closes the uterine arteries more or less, both by direct compression of the vessels and by the traction.

Beiträge zur klinischen Chirurgie, Tübingen.

October, LX, Nos. 1-2, pp. 1-429.

62 *Operations under Intrapulmonary Positive Pressure. (Druckdifferenz-Operationen.) H. Küttner.
63 *Surgery of the Lungs: Bronchotomy and Resection of the Lungs. (Zur Lungenchirurgie.) W. Danielsen.
64 *Comparative Experimental Research on Methods for Maintenance of Intrapulmonary Positive Pressure. (Physiologie des Ueber- und Unterdruckverfahrens.) L. Dreyer and K. Spannaus.
65 Removal of Giant Tumors of the Small Pelvis with Resection of Pubic Bone and Symphysis. (Entfernung übergrosser Tumoren des kleinen Beckens.) H. Küttner.
66 Necessity and Possibility of Retention of Spleen in Injury or Disease of This Organ. (Beitrag zur konservativen Milzchirurgie.) W. Danielsen.
67 Fetal Peritonitis. A. Peiser.
68 Sarcoma in the Intestines. (Sarkom des Darmes.) F. Munk.
69 Inflammatory Tumors in Abdominal Wall Following Appendicitis. (Entzündliche Bauchdeckentumoren im Gefolge der Appendicitis.) H. Meyerson.
70 *Technic of Antiferment Treatment of Suppurative Processes. E. Müller and A. Peiser.
71 Practical Importance for Surgery of Serodiagnosis of Syphilis. (Praktische Bedeutung des serologischen Syphilis-Nachweises der Chirurgie.) H. Coenen.
72 Carcinoma of the Nipple. K. Hannemüller and F. Landois.
73 Treatment of Fracture of Upper Arm Above the Condyle. (Behandlung des supracondylären Oberarmbruches.) H. Coenen.
74 Prognosis of Traumatic Simple Dislocation of the Shoulder. (Zur Prognose der traumatischen, unkomplicierten Schulterluxation.) Schulz.
75 Diffuse Giant-Celled Sarcoma of Tendon Sheaths. (Riesenzellensarkom der Sehnenscheiden.) K. Fritsch.
76 The Tendon Sheaths of the Foot in Relation to Tendovaginitis and Perimyalitis Crepitans. (Anatomische Untersuchungen über die Sehnenscheiden der Fussbeuge.) O. Seemann.
77 *Serodiagnosis of Staphylococcus Affections. H. Coenen.

62 to 64. **Operations Under Intrapulmonary Positive Pressure.**—Küttner has the appliances both for the Sauerbruch negative pressure and the Brauer positive pressure technics, and has used them alternately in 21 operations on the thorax. He describes this experience in detail, and states that both technics have their advantages, but that he prefers the Brauer method. Danielsen reports from the same clinic considerable experimental work with both technics, including operative removal of a foreign body from a bronchus by direct bronchotomy. He has found in the literature accounts of three cases in which this was done, reported by Curtis, Duncan and Schiassi, with successful outcome in two cases. He cites the various points to be borne in mind in such interventions and the best technic for resection of the lung. The proximal sections of the bronchus can be separated from the lung without cutting, and without much hemorrhage. The bronchus is best closed by a running suture including the cartilaginous bronchus and the peribronchial tissue. Wounds in the lung are best closed with fine silk sutures taken through the pleura. Dreyer and Spannaus report research on the physiologic phenomena during artificial maintenance of the intrapulmonary pressure: the behavior of the respiration, and of the pulse in the general and lesser circulation, the blood pressure in the venous system, and the varying conditions in the thorax with each technic. All this research confirms the fact that there is no essential difference between the action of the Sauerbruch pneumatic cabinet and Brauer's positive lung inflation.

70. **Antiferment Treatment of Suppurating Processes.**—The "physiologic treatment of wounds" introduced by Müller and Peiser was described in these columns June 6, 1908, page 1950. It is based on the antagonistic action of proteolytic leucocyte ferment and its antiferment normally in the blood serum and, in increased amounts, in morbid effusions. If the antiferment is supplied artificially to a "hot" abscess it transforms the lesion into a "cold" abscess, and thus it has unlimited therapeutic indications. The antiferment can be derived from the patient's own blood serum, after venesection, or from puncture fluids. If of foreign origin, the serum is filtered through porcelain. Trypsin has proved a convenient means of test-

ing the proportion of antiferment in the serum. The antiferment acts only by direct contact, and the best technic for its application has been found to be by aspirating the contents of the abscess, through a puncture, and then injecting the antiferment through the same needle, enough to fill the cavity without distending it. The contents of the abscess are then aspirated again, and again it is filled with fresh antiferment which is then left in the cavity. If the spot is still sensitive to pressure the next day, the procedure is repeated. No incision is required with this technic; it is applicable only when a mastitis or other process is tending to abscess formation. Thirteen typical cases of abscesses, felons, etc., are described in detail, out of an experience of 100 cases, to show the advantages of this "physiologic" treatment. The antiferment attracted to the spot is probably, they think, the main factor in the benefit from hyperemic treatment. A serum rich in antiferment can be kept on ice for several weeks in stoppered vessels. It should be tested from time to time to determine its strength. The larger the proportion of antiferment, the better and longer the serum keeps.

77. **Serodiagnosis of Staphylococcus Affections.**—Coenen has been experimenting with the cutaneous toxin test, agglutination, opsonic index and antitoxin tests, but found that the agglutination test—the technic similar to that in typhoid—is the most reliable of all. Positive findings are not obtained in recent, brief infection; a more chronic course is indispensable for positive agglutination.

Berliner klinische Wochenschrift.

November 9, XLV, No. 45, pp. 2009-2052.

78 *Occurrence of Duodenal Ulcer Before Age of 10. (Vorkommen von Ulcus duodeni im ersten Dezennium.) L. Kuttner.
79 *Permanent Results of Transplantation of Vessels and Organs. (Ueber Dauerresultate nach Gefäss- und Organtransplantationen.) Capelle.
80 Ringworm in Children. (Mikrosporie und Makrosporie der Kinderköpfe.) F. Glaser.
81 Experimental Experiences with Spengler's Tuberculosis Immune Body—L-K. (Tierversuche mit dem Spengler'schen Tuberkulose-Immunkörper.) G. Landmann.
82 *Electric Treatment of Bronchial Asthma. (Neue Behandlung von Bronchialasthma.) O. Günzel.
83 *Mechanical "Thymus Death." (Mechanischer Thymustod.) L. Hulsmans.
84 *Relations Between Tuberculosis and Human and Bovine Tubercle Bacilli. (Untersuchungen über die Beziehungen zwischen der Tuberkulose und den Tuberkelbacillen des Menschen und der Tuberkulose und den Tuberkelbacillen des Rindes.) J. Fibiger. Commenced in No. 44.

78. **Duodenal Ulcer in Children.**—Kuttner found an ulcer in the duodenum in the cadaver of an infant a month old who had succumbed to intestinal hemorrhage. In a second case three round ulcers were found in the duodenum of a child of 4 dying with acute diarrhea and vomiting of blood. He is inclined to believe that an ulcer in the duodenum may be a cause of stenosis of the pylorus in infants; the reflex spastic contraction of the pylorus may lead to functional stenosis. This assumption is sustained by the fact that admixture of blood has been observed in the vomit in cases of stenosis of the pylorus, and even coffee dregs vomit. Another argument in favor of this assumption is the unusual amounts of free hydrochloric acid sometimes encountered with the stenosis. Torday has reported a positive case in which an ulcer was found in the duodenum after death at the age of 8 months with the syndrome of congenital stenosis of the pylorus. In obscure anemic conditions in infants and young children, the possibility of an ulcer in the duodenum should be borne in mind and the stool examined for occult blood. Treatment of ulcer in the duodenum should be along the same lines as for ulcer in the stomach. If there is hemorrhage, hot cataplasms to the stomach region should be replaced by application of ice. Operative treatment has little chance of success during the shock from extensive hemorrhage.

79. **Ultimate Results from Transplantation of Vessels and Organs.**—Capelle reports results from the experimental work in this line at Garré's clinic at Bonn. The implanted arteries functionate well and the vascular wall adapts itself to the new conditions. Veins taking the place of arteries become thicker and more like arteries. It was found possible to restore the thyroid to its place and function by means of suture of the vessels after the organ had been totally separated and kept over an hour outside of the body. After its restcration to place the animals developed normally, but when the thyroid was finally removed for examination, 245 days after the first operation, the animals rapidly succumbed to typical postthyroidectomy tetany. The experiences with circular union of transverse severed vessels and the substitution of resected arteries by implanted segments of arteries or veins, proved so successful that Capelle declares that the method is ripe for adoption in the clinic.

82. **Electric Treatment of Asthma.**—Günzel is convinced that the asthmatic spasm is frequently traceable to some peripheral point. In one case removal of a small projection in the nose completely cured nocturnal asthma in a boy of 5. Besides this class of cases, in 50 cases of bronchial asthma he has applied the high-frequency current. This current passed through an aching nerve renders it insensible, and it can be used to induce local anesthesia, to cure neuralgia, rheumatoid pains, etc. In an acute attack of asthma the electricity rapidly soothes and the spasm subsides. From two to four applications at one-hour intervals relieve and cure the attack of asthma without necessity for morphin.

83. **"Thymus Death."**—In the two cases reported the apparently healthy children died suddenly during sleep and nothing could be found to explain the fatality except a very large thymus. Probably the child threw its head back in its sleep, thus compressing important organs between the large thymus and the spine. In both cases reported, the trachea and aorta were not involved; the compression was mainly on the veins as evidenced by the edema in brain and lungs and the striking coagulation in the pulmonary veins and left side of the heart.

84. Abstracted in THE JOURNAL, December 12, page 2096.

Deutsche Zeitschrift für Chirurgie, Leipsic.

November, XCV, Nos. 1-5, pp. 1-539. E. Sonnenburg Number.

85 *Sensitiveness to Pain of the Viscera Innervated by the Sympathetic. (Schmerzempfindlichkeit des visceralen Sympathicusgebietes.) Goldscheider.
86 *New Fundamental Principle in Pharmacology. (Neues pharmakologisches Grundgesetz.) M. Jacoby.
87 Serodiagnosis of Syphilis in Affections of Aorta, Tabes and in Syphilis. (Erkrankungen der Aorta, Tabes dorsalis und Lues.) A. Schütze.
88 Hematogenic Infection in Appendicitis and Cholecystitis. Canon.
89 Appendicitis and Trauma. (Appendicitis und Unfall.) H. Strohe.
90 Herniologic Notes. (Kasuistischer Beitrag aus dem Gebiete der Herniologie.) P. Tschmarke.
91 Nervous Paralyses After Injury of Upper Arm. (Nervenlähmungen nach Oberarmverletzungen.) R. Mühsam.
92 Traumatic Subcutaneous Ruptures of Gastrointestinal Canal. (Traumatische subkutane Rupturen des Magen-Darmkanales.) Schwarz.
93 *Postoperative Gastrointestinal Hemorrhage. (Postoperative Magen-Darmblutungen speziell nach Appendicitisoperationen.) G. Schwalbach.
94 *Automobile Injuries. (Automobilverletzungen.) Zimmer.
95 *Etiology, Diagnosis and Treatment of Tubal Pregnancy. (Tubargravidität.) L. Fiedler.
96 Surgical Importance of Region Below Diaphragm. (Das Hypophrenium und seine chirurgische Bedeutung.) v. Renvers.
97 Pyocyanase Infections and Diseases. (Behandlung von Infektionskrankheiten, speziell der Diphtherie, mit Pyocyanase.) E. Well.
98 Influence of Castration on Respiratory Metabolism. (Einfluss der Kastration auf den respiratorischen Stoffwechsel.) L. Zuntz.
99 Invagination of Small Intestine from Inward Protrusion of Meckel's Diverticulum (Dünndarmin vagination durch Einstülpen eines Meckelschen Divertikels.) R. Kothe.
100 *Ischemic Contracture of Muscles and Plaster Cast. (Ischämische Muskelkontraktur und Gipsverband.) O. Hildebrand.
101 *Prevention of Recurrence of Kidney Stone. (Zur Verhütung von Rezidiven der Nierensteinkrankheit.) G. Klemperer.
102 Volvulus of Hour-Glass Stomach. (Magenvolvulus bei Sanduhrmagen.) O. Hermes.
103 Latent Appendicitis with Symptoms of Ileus in the Young. P. Goedecke.
104 Malformations in Upper Extremity. (Missbildungen an der oberen Extremität.) M. Cohn.
105 Successful Removal of Dermoid Cyst in Mesentery of Small Intestine. (Operativ geheilter Fall von Dermoidcyste im Mesenterium des Dünndarms.) Federmann.
106 Experiences with Marmorek's Antituberculosis Serum. A. van Huellen.
107 *Technic for Spinal Anesthesia at Bier's Clinic. (Das zurzeit an der Berliner Chirurgischen Universitätsklinik übliche Verfahren der Rückenmarksanästhesie.) A. Bier.
108 *Experimental and Technical Study of Spinal Anesthesia. (Lumbalanästhesie.) Oelsner and Kroner.
109 Tumors in the Cerebello-pontine Angle and Multiple Neurofibromatosis. (Zur Kenntnis der Kleinhirnbrückenwinkeltumoren und der multiplen Neurofibromatose.) A. Westphal.
110 Interesting Postmortem Findings in Gunshot Wounds of Skull. (Sektionsbefunde von Schädelschüssen.) C. Benda.
111 Gunshot Wounds of Abdomen in Peace. (Beiträge zur Kenntnis der Bauchschussverletzungen des Friedens.) H. Kohl.

112 Fractures of the Vertebræ, Especially the Rarer Forms. (Wirbelsäulenbrüche.) T. Gümbel.

113 *Attempts to Resuscitate Animals by Passing Arterial Blood Through the Heart and Central Nervous Organs. (Versuche zur Wiederbelebung von Tieren mittels arterieller Durchströmung des Herzens und der nervösen Zentralorgane.) O. Zeller.

85. **Sensibility to Pain on the Part of the Viscera Innervated by the Sympathetic.**—Goldscheider admits that the visceral nerves may be non-sensitive to pain when they are in a normal condition, but thinks that morbid conditions may arise in which they may become sensitive. The pain is a reaction the same as a reflex. It may be the sum of a number of sensations below the dignity of a pain, but becoming pain by their accumulation. This assumption is an argument against the existence of "pain nerves."

86. **New Pharmacologic Principle.**—Jacoby expatiates on the advantages of surgeons and pharmacologists working together, and describes experimental research which demonstrated that the joints are by no means the chosen seat of injected salicylic acid; the blood serum is normally its favorite stronghold. On the other hand, in animals injected with staphylococci, the salicylic acid was found in the joints in twice as large amounts as in normal joints. This led to the discovery that a drug obeys its own laws of distribution in the normal and diseased organism. This distribution may be different for each affection and individual case. He states that this simple law is a new principle which has been overlooked by pathologists and pharmacologists hitherto. It explains, for instance, how an infected joint can look out for itself and secure a concentration of the drug not reached elsewhere. It also explains how a sick person is able sometimes to stand doses which a healthy one would be unable to tolerate. In case of a joint affection, a large proportion of the salicylic acid administered goes to the joints, which in a healthy person would go to the central nervous system. The infected are thus less liable to intoxication than the healthy. This new principle also explains the phenomena of the "point of lesser resistance." Altered tissue has an altered power of attracting foreign substances, drugs or bacteria. Tuberculous tissue, for instance, attracts iodin more strongly than the normal tissues. If the eye of an animal is infected with tubercle bacilli, and iodin is then injected elsewhere, it will be refound almost entirely in the tuberculous eye. It is possible that this phenomenon may yet be utilized for diagnostic purposes. Velden has recently reported that injected iodin was not discovered in the sound parts of an organ, but it was found collected in the cancer foci in the organ. Jacoby calls the attention of surgeons to this fact in particular. Only in operations is the opportunity afforded to have an individual incorporate some drug and then to study the concentration of the drug in the tissues, the tumor or parts of the tumor. At present we do not know of any drugs that act especially on tumors, but advancing science may soon discover such. Examination of an excised scrap will then reveal whether the drug has reached the tumor, and whether it is best incorporated by way of the mouth or veins or subcutaneously or by direct injection into the tumor.

93. **Postoperative Gastrointestinal Hemorrhage.**—Schwalbach states that one-third of the cases of hemorrhage following operations on the appendix on record occurred in children. The hemorrhage is evidently, he thinks, the result of thrombosis in the vessels of the omentum and mesentery. Similar conditions can be reproduced in animals; the operation is the main factor in their occurrence. The prognosis is grave, and treatment can only be symptomatic. In the 30 cases on record, the outcome was fatal in 17. In the 2 personal cases reported, the hemorrhage followed an interval appendicectomy; the hemorrhagic stools were first noted the third and fifth day after the operation and they continued for a week, after which there were no further signs of hemorrhage. The first patient, a woman of 28, was treated with strychnin, opium and gelatin; the second, a man of 35, with adrenalin only. The hemorrhagic erosion in the cases that came to autopsy corresponded to the site of the ordinary round ulcer, and Schwalbach is confident that both are referable to local disturbances in the circulation, for which the operation is mainly responsible in the postoperative cases.

94. **Automobile Injuries.**—Zimmer states that 145 persons were killed and 2,419 injured by automobiles in Germany during eleven months in 1906-1907, and that 80 of the injured passed through Sonnenburg's surgical service at Berlin, with a mortality of 10. In one case a girl of 9 was run over by an electric cab and was dismissed from the hospital in good health sixty-four days afterward, entirely recovered from fracture of several ribs, of the upper arm and double fracture of the pelvis with laceration of the bladder. The almost immediate laparotomy allowed conditions to be promptly remedied, the arm placed in a splint and the pelvis in a plaster cast. The only disturbance left is that the right leg is still a trifle short. In 65 of the cases the injuries were very severe; bones were fractured in more than 50 per cent. Especially noticeable was the large number of fractures of the base of the skull and concussion of the brain, the extent of the hematomas and of the contusions of the soft parts and the undermining of the skin. Besides these, there were a few cases of the typical "automobile fracture," the lower end of the radius broken by too sudden starting of the lever when the spring fails to work. This injury generally heals rapidly. In one such case the diaphysis of the radius was fractured and the ulna dislocated to such an extent that it bored through the wrist.

95. **Tubal Pregnancy.**—Fiedler concludes from his research on 82 cases of tubal pregnancy that it is not so rare as some assume, but averages 2.3 per cent. of all pregnancies. A predisposition is afforded by gonorrheal and puerperal infection and by trauma. Elderly multiparæ formed the majority in his experience. He asserts that the presence of urobilin in the urine, in the absence of other affections predisposing to urobilinuria, is an important aid in diagnosing a disturbed extrauterine pregnancy. He advocates laparotomy, even if there is already an encapsulated retrouterine hematocele, and declares that it is not necessary to wait for the subsidence of shock. He advises removal of clots only in so far as it is possible to do so without injury of the intestines or prolongation of the operation.

100. **Ischemic Muscular Contracture and Plaster Casts.**—Hildebrand remarks that the denunciation of the plaster cast as responsible for the ischemic muscular contraction in cases of fracture of the elbow and forearm is irrational, as in 34 of the 56 cases on record no plaster dressing had been used, and as, further, the contracture had been observed before the advent of plaster casts. The trouble is the result of disturbance in the circulation of the parts, and it may occur from any disturbance of the kind. The radial and ulnar pulse should be carefully investigated in all such cases, and if the pulse is found weak no further compression should be permitted. If a plaster dressing or splint or adhesive plaster is used, the main point is to see that it is extensively padded. If the ischemic contracture then occurs, the primary injury of the vessel is the only factor responsible for the trouble.

101. **Prevention of Recurrence of Kidney Stones.**—Klemperer expatiates on the necessity for internal medical measures to prevent recurrence of kidney stones after their operative removal, and advocates for this measures to promote the flow of urine through the kidneys to wash out the sediment that otherwise might form concretions. Every such patient should be advised, he asserts, to drink frequently between meals, taking from 200 to 300 c.c. every two or three hours and to drink copiously just before retiring, as the night urine is the most concentrated and has the greatest tendency to sediment formation. A glass of water beside the bed at night can be sipped as the patient wakes—such persons are generally elderly and wake often. The fate of these patients depends on the observance of this advice. The kind of beverage is of less importance, although weakly alkaline, carbonated mineral waters should be given the preference. He adds that from the standpoint of prevention of recurrence of kidney stones, there are no contraindications to the use of alcoholic beverages. The patients with a tendency to obesity and heart disease should drink copiously, as above, but exclusively between meals, taking food frequently, but in small amounts, that leave the stomach soon empty, and drinking freely between the meals. In this way the tendency to kidney stones and to

obesity will be combated at the same time. Rosenfeld has his obese patients drink up to 10 quarts of water a day, all between meals, and has found this extremely effectual in reducing weight. In heart disease, the free ingestion of water as above is not advisable in case of failing compensation, but in other conditions it is not contraindicated. The intake of fluid within reasonable bounds does not injure the heart muscle, as is shown by the blood pressure and the experiences with diabetes. The diet should be mixed, but the oxalate-stone patients should refrain from tea and spinach, and the urate stone patients from eating the glandular organs (thymus, liver, kidneys). He has known of instances in which a urate stone patient had followed the physician's advice to refrain from meat, and this strict vegetarian diet for four years had resulted in the formation of oxalate stones in the kidney. Any exaggeration should, therefore, be avoided, although it is wise to restrict the amount of salt to the minimum needed to render the food palatable; the more salt in the urine, the greater the tendency to the depositing of sediment. Drugs are superfluous, he says, and even sodium bicarbonate should not be given unless the reaction of the urine is constantly supervised or harm may result. A weakly alkaline mineral water is perhaps best, but excess even of this should be avoided. In case of oxaluria, small doses of a magnesium salt (0.5 gm., or 7.5 grains, of magnesium sulphate four times a day) will keep the calcium oxalate in solution in the acid urine. Especial care is required in the cases of phosphate stones, as these display the greatest tendency to recurrence. Concomitant infection, of course, requires treatment, but the simple cases in which the urine is merely excessively alkaline, possibly the effect of a too exclusive vegetable diet, may require regulation of the diet and measures against hypersecretion in the stomach. It is a difficult matter to advise a patient whose phosphate stones are the result of gastrogenic alkaliuria. If lime is excluded from the diet, it is drawn from the tissues of the body and serious damage may result. No dietetic regulations are able to prevent recurrence of aseptic phosphate stones—all that can be done is to order copious drinking between meals, a mixed diet, supplemented by treatment of the nervous system and, possibly, occasional administration of sodium oxalate. In every such case careful analysis of the urine is imperative.

107. **Spinal Anesthesia.**—Bier regards cocain as the most dangerous and tropacocain as the safest drug for spinal anesthesia. The ordinary dose of the tropacocain is 0.05 gm. (¾ gr.), and the maximum dose 0.06 gm. (1 gr.). To this Bier adds 0.0001 gm. suprarenin; the solution must be isotonic and warm. The injection is made between the second and third, or first and second lumbar vertebræ, and the anesthetic should never be injected until the cerebrospinal fluid is flowing in a series of rapid drops from the needle. Bier states that the only serious by-effect observed was vomiting in about 5 per cent. of the cases. In the last 400 cases the only noticeable symptom was transient pallor and small pulse; the latter condition being observed once in a man of 82. Headache occurred afterward in 6 per cent. of the cases, but generally in women who had suffered from headache previously. Recently, he has been using with satisfaction the scopolamin-morphin technic as a preliminary to the spinal anesthesia, especially for nervous and excited patients. He makes two injections, an hour and a half and three quarters of an hour before the operation, of a mixture of 0.0012 gm. (1/50 grain) scopolamin and 0.03 gm. (½ gr.) morphin with distilled water to 2 c.c. injecting 0.7 or 0.8 c.c. at a time, thus using only about two-thirds of the total amount of the mixture. With this technic the patient is not too drowsy to sit up for the spinal puncture, but he must be supported or he will fall as he sits, bent forward, on the edge of the operating table. Bier's experiences with a gelatin addition to the anesthetic and with attempts to extend the analgesia have not been successful. In conclusion he reiterates his belief that the evil effects of general anesthesia are much more extensive and serious than is recognized at present. The general anesthesia causes important disturbances which it is impossible to set down in statistics. This is shown, he says, by the patients operated on for cancer of the rectum under general anesthesia—they present afterward the picture of serious depression, while those operated on under spinal anesthesia do not seem sick at all afterward. The same is observed after the Freund-Wertheim operation on the uterus. Bier has had two fatalities with spinal anesthesia. One was reported by Dönitz in 1906; more than twice the standard dose was injected in this case. The second, unreported case, was that of a man of 40 being treated for external inguinal hernia. The standard dose was given, but without any suprarenal preparation, and the pelvis was raised as usual. Vomiting and sudden heart failure followed in a few minutes.

108. **Spinal Anesthesia.**—Oelsner and Kroner report the experiences at Sonnenburg's clinic and the results of considerable experimental research. They experimented with injection of salt solution cooled to freezing point, after withdrawal of a corresponding amount of cerebrospinal fluid. The ice-cold fluid does not injure the tissues while the anesthetic effect justifies, they say, further trials of this method, especially, they add in conclusion, as none of the methods of spinal anesthesia in vogue to date are entirely free from possible evil effects and never can be free from them, as they are based on the introduction of a foreign chemical substance which must inevitably do more or less injury.

113. **Attempts to Resuscitate Animals by Passing Arterial Blood Through the Heart and Nervous System.**—Zeller's article reviews the numerous researches of others in approximate lines and reports a series of experiments with various substances to act on the blood. The results suggest that the method might possibly be applied in the clinic as a last resort.

Medizinische Klinik, Berlin.

November 1, IV, No. 44, pp. 1669-1706.

114 *Anthrax and Its Treatment. (Milzbrand und seine Behandlung.) Barlach.

115 * Clinical Study of Mitral Stenosis and Relative Insufficiency of Pulmonary Valves with Mitral Stenosis. (Zur Klinik der Stenose des Mitralostiums und zur Frage der relativen Insuffizienz der Pulmonalklappen bei Mitralstenose.) N. Ortner. Commenced in No. 42.

116 Importance of Anaërobic Bacteria in Appendicitis. M. Heyde.

117 Serotherapy of Epidemic Cerebrospinal Meningitis. (Ueber epidemische Genickstarre.) F. Quensteldt.

118 Serotherapy of Croupous Pneumonia. F. Krische.

114. **Treatment of Anthrax.**—Barlach states that under expectant treatment 3 died out of 10 patients with anthrax, while none died in the 9 cases between 1900 and 1905 in which active treatment was undertaken. Since 1905 he has been using a method that seems to shorten the course of the affection still more, and there has been no mortality in the 23 cases and no disfiguring scars. The first principle in treatment is to avoid further injury. Especially injurious is any pressure on the pustule, which forces the bacilli out into the blood. It is important, therefore, for the patient to lie quietly in bed. In mild cases it is sufficient to cover the pustule and its vicinity with an antiseptic moist dressing; mercury bichlorid or aluminum acetate can be used for the purpose. The strictly local lesion rapidly heals under this treatment, but in the severer cases a crucial incision is made and the actual cautery is used to make a groove of deep punctures around the lesion. This groove forms a scab which renders it difficult for the anthrax bacilli to penetrate into the surrounding tissues. This crucial incision and the ring of cauterization around the lesion are simple and can scarcely be considered an actual operation. The pain is so slight that it seems to indicate that the sensibility in the pustule is much reduced. He adds that the effect of this treatment is invariably so good that it has scarcely a parallel in therapeutics, except antitoxin in diphtheria.

115. **Mitral Stenosis and Relative Insufficiency of the Pulmonary Valves with Mitral Stenosis.**—Ortner concludes this extensive study of the auscultation findings in three cases of mitral stenosis, with a review of a number from the literature. He believes that the distinctly different character of two murmurs of the same phase of contraction of the heart does not necessarily imply a different origin for the murmurs. In certain cases the whole series of auscultation symptoms (presystolic murmur, accentuated first sound, systolic and diastolic sounds) of mitral stenosis and incompetency is audi-

ble not only over the left base of the heart, but it is conveyed up into and is audible in both carotids. In rare cases of mitral incompetency the systolic murmur may be heard exclusively in the left chest at the back, in the region of the angle of the scapula, at least for a certain length of time. The possible existence of relative incompetency of the pulmonary valves in consequence of mitral stenosis is rendered probable by Bryant's first case, but it is not proved. All the rest of the cases classified under this head were in reality cases of mitral stenosis with a diastolic murmur over the left base of the heart.

Münchener medizinische Wochenschrift.

November 3, LV, No. 44, pp. 2265-2312.

119 *Research on Variola. S. v. Prowazek and H. de Beaurepaire.
120 *Influence of "Scarlet Oil" on Mouse Tumors. (Einfluss des Scharlachrotes auf Mäusetumoren.) R. Werner.
121 *Nervous Disturbances of Arms in Arteriosclerosis. (Dyskinesia und Paresthesia intermittens.) O. Wandel.
122 Induced Orthostatic Albuminuria. (Albuminuria provocativa orthostatica.) A. W. Bruck.
123 Importance and Specificity of Complement-Binding Antibodies in Tuberculosis and Their Connection with Healing Processes. (Komplementbindende Antikörper bei Tuberkulose.) Engel and Bauer.
124 Chronic Pneumothorax. A. Bittorf.
125 Cirrhosis of the Liver. (Leberzirrhose.) O. Meyer.
126 *Foreign Bodies in the Esophagus. (Fremdkörper des Oesophagus.) A. Ach.
127 Treatment of Hypospadias in Adults. (Behandlung der Hypospadia penoscrotalis Erwachsener.) H. Mohr.
128 Etiology of Köhler's Bone Affection. (Aetiologie der Köhlerschen Knochenerkrankung.) A. Dobisch.

119. Research on Variola.—This communication from Rio de Janeiro reports research which seems to indicate that the causal agent of smallpox is a symbiosis with a streptococcus, plus the presence of a certain complement. The scarcity of the virus in the circulation and the lack of antibodies in the blood seem to demonstrate that smallpox is predominantly an ectodermal affection of the tissues, and that the immunity is an immunization of the skin.

120. Influence of "Scarlet Oil" on Mouse Tumors.—Werner has been experimenting with the dye, scarlet red (*Scharlachrot*) oil injected into a mouse tumor. The findings show that the resulting proliferation is not from chemotactic influencing of the cells, but is the result of their irritation. The proliferation in the mouse tumor described occurred always away from the injected fluid. This concentric growth is the first testimony that the cells are not attracted to the dye, but can grow away from it.

121. Nervous Disturbances in the Arms in Arteriosclerosis.—Wandel found dyskinesia and paresthesia in 13 out of 30 women over 55 years old, and in 6 others there were more or less pronounced arteriosclerotic disturbances in the legs. Similar disturbances were noted in 13 out of 32 men. In all these patients the peripheral vascular disturbance accompanied arteriosclerosis, but no general taint was evident in any of the cases, no syphilis, diabetes or tobacco poisoning. Only the age over 55, with its general and special phenomena of wearing out, was common to all the cases. There was no neuropathic tendency, but the localization of the peripheral disturbances seemed to be always determined by the functional demands made on the extremities. Local chilling and exposure to cold water or other local injury seemed to entail the trouble, with their excessive reflex irritation of the peripheral vessels, in addition to the functional demands, reducing the vitality of the parts and localizing the arteriosclerosis. Aschoff found that typical arteriosclerosis could be artificially induced by hanging up an animal by the hind legs for three minutes once a day. The analogy was complete to the microscopic details. The peripheral occupation-arteriosclerosis shows less tendency to calcification and changes in the media than to obliterating endarteritis with its consequent interference with the nourishment and functioning of the peripheral nerves.

126. Foreign Bodies in the Esophagus.—Ach relates his experience in seven cases of swallowed foreign bodies extracted with the aid of an esophagoscope; three additional cases required esophagotomy. He expatiates on the advantages of esophagoscopy as facilitating the removal of foreign bodies. It is the safest, simplest and least dangerous method for diagnosis and treatment in such cases. Even the Roentgen rays may give misleading findings, as in a case described in which a patch of calcification simulated a foreign body and led to extreme efforts, to dislodge it, in the course of which the foreign body was expelled from the bowels. He relates a few cases in which numerous foreign bodies passed harmlessly through the digestive tract. In one, a man swallowed nails, needles and various foreign bodies and passed a large number by the rectum with little disturbance, one such evacuation including 16 nails, 3 hairpins and a pocket knife, beside removal of hatpins, etc., in the course of three laparotomies. Ach warns against the practice of pushing a foreign body down into the stomach unless it is known to be a small coin or a soft piece of meat or bread. The local spasm of the muscle holding the foreign body in the esophagus can sometimes be relieved by general anesthesia.

Therapeutische Monatshefte, Berlin.

November, XXII, No. 11, pp. 549-604.

129 *Secretion of Hydrochloric Acid and Hydrochloric Acid in Therapeutics. (Salzsäuresekretion und Salzsäuretherapie.) E. Fuld.
130 *Recognition and Internal Treatment of Pyloric Stenosis in Infants. (Erkennung und interne Behandlung der hypertrophischen spastischen Pylorusstenose der Säuglinge.) J. Ibrahim.
131 Allowing Patients to Get Up Soon After a Laparotomy. (Das frühe Aufstehen nach Laparotomien.) Hartog.
132 *Resuscitation in Apparent Death by Means of Oxygen and Intubation. (Wiederbelebung Erstickter und Scheintoter mittels Sauerstoff und Intubation.) F. Kuhn.

129. Hydrochloric Acid in Therapeutics.—Fuld reviews the various theories in regard to the secretion of hydrochloric acid and its use in therapeutics, and calls attention to a number of erroneous conceptions in regard to treatment of stomach trouble. Among them is the administration of pepsin in an alcoholic medium, as alcohol is a ferment poison. He presents arguments to show that a small amount of hydrochloric acid before meals answers best the desired therapeutic purpose. The hydrochloric acid is very useful in a large proportion of cases of deficient secretion; those without symptoms do not require any treatment, and the severer cases can not be influenced by hydrochloric acid alone. He gives from five to ten drops of dilute hydrochloric acid several times a day. This small amount has little direct influence on the digestion, but it stimulates by reflex action the entire digestive process and approximates the physiologic antiseptic and antitoxic action, while it stimulates the secretion of pancreatic juice. In regard to pepsin, he suggests that it might be simpler, cheaper and the results more complete if the pepsin digestion were done before the food is taken. Combination of hydrochloric acid with pepsin or other substances is liable to annul the action of the acid completely. Food for persons with deficient secretion of hydrochloric acid requires more careful preparation or possibly pepsin predigestion.

130. Differentiation and Internal Treatment of Stenosis of the Pylorus in Infants.—Ibrahim enumerates the differential points and outlines the internal treatment, which has proved extremely successful in his hands in fifteen cases. Experience has shown that the hypertrophy of the pylorus increases and recedes, and influences can be brought to bear to favor its relaxation. During life the stenosis is by no means the hard ring found in the cadaver, and everything shows that the hypertrophy can be reduced by appropriate measures. The chief aim is the neutralizing of the acid stomach content with a mild alkaline water with the milk or between the meals. The act of sucking the breast induces a predisposition to spasmodic contraction of the pylorus, so that he finds it advisable to draw the breast milk with a modern breast pump and feed it to the child with a spoon, possibly removing the fat. The breast secretion can be kept up for two or three weeks in this way. Very small amounts of the milk, ice cold or merely at room temperature, are less liable to induce vomiting. He reduces the feeding to 30 gm. (a little less than an ounce) every two hours, or one-third this amount every hour, day and night, with possibly tepid Vichy water between meals in the same amount. This strict dieting should not be kept up for more than 8 or 10 days without supplementing it with rectal nutrient enemas. The stomach should be rinsed out every day and a cataplasm applied to

the region of the pylorus to reduce the pain and favor the relaxing of the spastic stenosis. In severer cases he has these cataplasms applied immediately after the meals, every 4 hours, day and night, for several weeks, removing the cataplasm as soon as it cools. Pfaundler recommends for the same purpose a Japanese pocket stove. With these measures complete recovery is the rule, and the stenosis never recurs, although nervous disturbances may be observed in later life. This fact suggests that such children require special oversight for prophylaxis. The differentiation of this form of stenosis is not difficult. The symptoms seldom develop before the end of the first or during the second, third or fourth week or even not till the eighth week. The first sign is frequent vomiting and decline in weight with the absence of intestinal dyspepsia. There is generally constipation and the stools are dark brown or a light meconium. The inefficacy of ordinary measures to control the vomiting and the explosive character of the latter, the absence of bile in the vomit, the pain during drinking and the extreme hunger of the infant, all aid in the differentiation, confirmed by the violence of the peristalsis in the stomach and the discovery of the tumor formed by the enlarged pylorus. Only 45 per cent. have been saved to date out of the 138 children operated on for this trouble, but if the symptoms continue to progress, operative treatment should be considered after 8 or 14 days, not waiting until the child has become too debilitated to stand any operative intervention.

132. **Oxygen by Intubation for Resuscitation in Apparent Death.**—Kuhn urges that a double current tube—such as he uses for peroral intubation—should be an indispensable adjunct to the life-saving equipment. The tube should be used to supply oxygen to the lungs, especially when the measures for resuscitation have to be kept up for hours. It avoids the injury of the parts liable with other measures, while it insures an even supply of air or oxygen, with its regular evacuation.

Zeitschrift für Geburtshülfe, Stuttgart.

LXIII, No. 1, pp. 1-216. Last indexed Nov. 14, p. 1742.

133 *Metastasis of Carcinoma of the Uterus in the Central Nervous System and the Organs of Sense. H. Offergeld.
134 Limitation of Indications for Extraperitoneal Cesarean Section. Total Extirpation After Cesarean Section, and Pubiotomy. (Zur Indikationsabgrenzung zwischen extraperitonealem Kaiserschnitt, Totalexstirpation nach Kaiserschnitt und Schambeinschnitt.) O. v. Franqué.
135 Malignant Adenoma of the Vaginal Portion of the Cervix Uteri. (Adenoma malignum portionis uteri.) F. Klinger.
136 Tuberculous Cysts in Corpus Luteum. A. Garbisch.
137 Etiology of Puerperal Wound Infection. M. Henkel.
138 Hypoplasia of the Tubes in Relation to Extrauterine Pregnancy. O. Höhne.

133. **Metastasis of Uterine Carcinoma in Nervous System and Organs of Sense.**—Offergeld has found records of metastasis in the brain in 20 cases; the metastasis generally occurs early, while the uterine cancer is still operable, and the metastatic nodule is solitary, although daughter tumors in the lungs and liver are comparatively frequent. The brain metastasis generally causes no symptoms; especially noticeable is the lack of signs of pressure on the brain. In 3 of the cases on record there was right hemiplegia, and in 3 others vague symptoms suggesting merely a possibility of an organic brain affection. He urges that the brain should be examined in all cases of uterine cancer that come to autopsy. In 5 cases on record metastases in the dura were observed, generally multiple, and accompanying advanced cancer. He was unable to find any record of any metastasis in the spinal cord, but asserts that the peripheral nerves in the vicinity of the uterine cancer are involved in metastasis more often than is generally supposed. Scraps of the nerves should be excised for histologic examination to throw further light on this subject. He has collected 4 cases of metastasis in the eye and 1 in the tongue. In all the cases in which the nerve was involved, the axis cylinder was intact, the connective tissue being exclusively affected.

Zentralblatt für Chirurgie, Leipsic.

November 21, XXXV, No. 47, pp. 1385-1416.

139 Surgery of the Temporal Bones. (Zur Chirurgie des Schläfenbeins.) E. Ruttin.
140 *Simple Apparatus for Artificial Respiration When the Thorax Has Been Opened. (Einfacher Apparat zur künstlichen Atmung bei eröffnetem Thorax.) M. Katzenstein.

140. **Apparatus for Artificial Respiration when the Pleura is Opened.**—One of Kuhn's peroral tubes is introduced into the trachea, the outer end connected by a long tube with a small bellows. A second tube branches from the center of the long tube with a funnel at the end through which the anesthetic is administered. When the thorax is opened the lung collapses, but it is inflated again by the bellows. The air then escapes through a small valve in the long tube, after which the lung is again inflated with the bellows. This is kept up at rhythmical intervals, and respiration proceeds smoothly and regularly. Katzenstein has used this apparatus once in the clinic and with complete success, after extensive trials on the cadaver.

Books Received

Acknowledgment of all books received will be made in this column and this will be deemed by us a full equivalent to those sending them. A selection from these volumes will be made for review, as dictated by their merits, or in the interests of our readers.

WALSH'S PHYSICIAN'S COMBINED CALL-BOOK AND TABLET. Monthly Form. Thirtieth Edition. Pliable Leather, with Pocket and Special Memoranda. Price, $1.50. Washington, D. C.: Ralph Walsh, M.D. Together with WALSH'S PHYSICIAN'S HANDY LEDGER. A Companion to Walsh's Physician's Combined Call-Book and Tablet. Cloth. Pp. 600 (for 600 patients). Price, $3.50. Larger Size for 1,200 Patients, $7. Washington, D. C.: Ralph Walsh, M.D.

QUARTERLY REPORT OF THE PROGRESS OF SEGREGATION CAMPS AND MEDICAL TREATMENT OF SLEEPING SICKNESS IN UGANDA. For the Quarter, Dec. 1, 1907, Feb. 29, 1908. By Captain A. C. H. Gray, R.A.M.C., Medical Officer in Charge of Sleeping Sickness Extended Investigations. With an Introduction by Dr. A. D. P. Hodges, Senior Medical Officer, Uganda. Paper. Pp. 35. London: Sleeping Sickness Bureau, 1908.

BEKNOPT LEERBOEK DER OOGZIEKTEN. Door Charles H. May, Oogarts te New York en Leeraar in de Oogheelkunde aan het Columbia College Aldaar. Naar den Tienden Amerikaanschen Druk op Verzoek van den Schrijver voor Nederland Bewerkt, door G. J. Schoute, Oogarts te Amsterdam. Cloth. Pp. 450, with illustrations. Amsterdam: H. Meulenhoff, 1908.

UNSERE MITTELSCHUELER ZU HAUSE. Schulhygieniche Studie. Nach Erhebungen an Münchener Mittelschulen, veranstaltet durch die Schulkommission des Aerztlichen Vereins München. Von Eugen Dornberger, pr. Arzt in Munchen, und Karl Grabmann, pr. Arzt in Munchen. Paper. Pp. 208. Price, 5 marks. München: J. F. Lehmanns Verlag, 1908.

LEÇONS ELEMENTAIRES DE MICROBIOLOGIE GENERALE. Professées a l'Ecole nationale d'agriculture et de médecine vétérinaire du Perou. Par E. Pozzi-Escot, Professeur de chimie et de microbiologie a l'Ecole nationale d'agriculture et de médecine vétérinaire du Perou. Cloth. Pp. 336, with illustrations. Price, 9 francs. Paris: Jules Rousset, 1909.

NERVOUS AND MENTAL DISEASE MONOGRAPH SERIES No. 2. STUDIES IN PARANOIA. By Nikolaus Gierlich, Wiesbaden. Contributions to the Study of Paranoia. By M. Friedmann, Mannheim. Translated and Edited by Smith Ely Jelliffe, M.D. Paper. Pp. 78. New York: Journal of Nervous and Mental Disease Publishing Co., 1908.

MANUEL DES MALADIES DE L'OEIL, A l'usage des étudiants et des practiciens. Par Charles H. May, M.D., Chef de Clinique et Moniteur D'Ophthalmologie a l'universalité de Colombie, New York. Traduit par P. Boulin, Professeur a l'Ecole de médecine d'Alger. Cloth. Pp. 428, with illustrations. Paris: G. Steinheil, 1908.

REPORT OF COMMITTEE ON BUILDING OF MODERN HOUSES. By General George M. Sternberg, M.D., LL.D., Chairman of Committee. Paper. Pp. 111, with illustrations. Washington, D. C.: The President's Homes Commission, 1908.

HUMAN FOODS AND THEIR NUTRITIVE VALUE. By Harry Snyder, B. S., Professor of Agricultural Chemistry, University of Minnesota. Cloth. Pp. 362, with illustrations. Price, $1.25. New York: The Macmillan Co., 1908.

MANUAL DE LAS ENFERMEDADES DE LOS OJOS para Estudiantes y Medicos, por Charles H. May. Traduccion por el Profesor C. E. Finlay. Cloth. Pp. 475, with illustrations. Barcelona: Salvat y C. aS. en C., 1909.

CATARACT EXTRACTION. By H. Herbert, F.R.C.S., Professor of Ophthalmic Medicine and Surgery, Grant Medical College. Cloth. Pp. 391, with illustrations. Price, $3.75. New York: William Wood & Co., 1908.

KLINIK DER BRONCHOSKOPIE. Von Hermann von Schrotter, Dr. Phil. et Med. in Wien. Paper. Pp. 688, with illustrations. Price, 20 marks. Jena: Verlag von Gustav Fischer, 1906.

THE MEDICAL RECORD VISITING LIST FOR 1909. Flexible Leather, with Pocket and Special Memoranda. New Revised Edition. Price, $1.50. New York: William Wood & Co.

PUBLICATIONS OF THE UNITED STATES PUBLIC HEALTH AND MARINE-HOSPITAL SERVICE. October, 1908. Paper. Pp. 16. Washington: Government Printing Office, 1908.

AMERICAN ONCOLOGIC HOSPITAL. Philadelphia. Third Annual Report for Year Ending Dec. 31, 1907. Paper. Pp. 46. Philadelphia: The Holmes Press, 1908.

SLEEPING SICKNESS BUREAU. Bulletin No. 1, October, 1908. Paper. Pp. 51. London: Sleeping Sickness Bureau, 1908.

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